THE BUILDER

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Illustrations.

Messrs. Debenham & Freebody's Premises, Wigmore-street. Messrs. W. Wallace and James S. Gibson, F.R.I.B.A., Architects.

"Putteridge Bury," Herts. Messrs. Ernest George & Yeates, FF.R.I.B.A., Architects.

Forest Hill, Wimborne. Messrs. Forsyth & Maule, Architects.

An Architect's Home. Mr. Clement O. Nelson, A.R.I.B.A., Architect.

Ceiling, "Bishopsbarns," York. Designed by Mr. G. P. Bankart.

Illustrations in Text.

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English Cathedrals Illustrated from their Ancient Seals

FOLLOWING the articles which appeared in the *Builder* in March and April of last year, dealing with civic and ecclesiastical architecture as depicted on ancient seals, the present remarks may be considered as the concluding portion of the series, though the subject to which they refer is complete in itself.

The illustrations have been selected from the great collection of casts and impressions in the British Museum, and, owing to the way in which they were photographed, the seals appear reversed in the print. This does not, however, affect the architectural features under consideration, though it is as well that the reader should bear it in mind.

Comparatively few of our English cathedrals are represented on their official seals, but the examples that do occur are of great interest. For the sake of convenience they are arranged in alphabetical order instead of chronologically.

Bath.

The most ancient seal of this cathedral is believed to date from the foundation of the abbey in the Xth century, and the curiously rude and plain building depicted thereon is certainly indicative of an early period of English architecture. No windows or doors appear in the walls of the three towers, which are covered with conical roofs and ball-finials. This seal seems to have been in use for several hundred years until it was replaced by a later one in the XVth century.

Bristol.

The second seal of the Austin Priory, now the Cathedral, is the only one which exhibits any architectural detail, and it dates from the XIVth century. The impression in the British Museum is unfortunately imperfect and injured by pressure, but a church can be distinguished, with four figures in the doorways.

Canterbury

Possesses three ancient seals of great interest, as befits the Metropolitan See of England. They all contain representations of the cathedral church, two of which are of the Norman period.

The first seal was in use in 1152, but was probably made in the XIth century. It is in good preservation, and shows a small building with central tower, tiled roof, and small flanking turrets. The second seal, dating from 1175, is much larger, and has a fine view of the cathedral with obviously Norman detail, as can be seen from the illustration. A large central tower surmounted by a four-winged seraph, is surrounded by four smaller ones, two of which are capped by weather-cocks and two by flags or vanes, all the roofs being pointed. The two frontal towers contain heads of saints, probably intended for SS. Alphage and Dunstan; beneath the central tower is a seated figure of Our Lord in an attitude of benediction, with nimbus and cross. The legend runs, "SIGILLVM ECCL'E XRI CANTVARIE PRIME SEDIS BRITANNIE." At one end of the building is an apsidal termination with a separate roof, probably intended for the east end. The third seal (1418) is more elaborate than its predecessor, and of excellent workmanship. On the obverse is seen the west front of the cathedral standing within the fortified walls of the city. The arcading and other architectural details are very clearly and beautifully executed, even to the hinges on the west door. The side towers contain heads of SS. Alphage and Dunstan, over which are two female heads; in the gable above the door is a half-length figure of Our Lord, and in the sky appear two censing angels. The reverse depicts Becket's martyrdom within a double-arched opening divided by a slender column, above which is the Divine Figure to whom the soul of the martyr is offered by two angels. The figures in the side niches are those of angels and knights, and over all are two angels bearing crowns in their hands. The legend refers to Becket in rhyming hexameters.

Carlisle.

This seal dates from 1303, and contains some architectural features apparently intended for an arcade or bridge, but there is no view of the church.

Chester.

The XIIIth-century seal of St. Werburgh's Abbey (afterwards the cathedral) has elaborate views of the conventual church on both sides. That on the obverse, part elevation and part section, shows a figure of the saint enthroned beneath the central tower, and on the reverse a kingly figure occupies the same position. The illustration is taken from a defective impression, which must have been very fine when complete, its original diameter measuring $3\frac{1}{8}$ in.

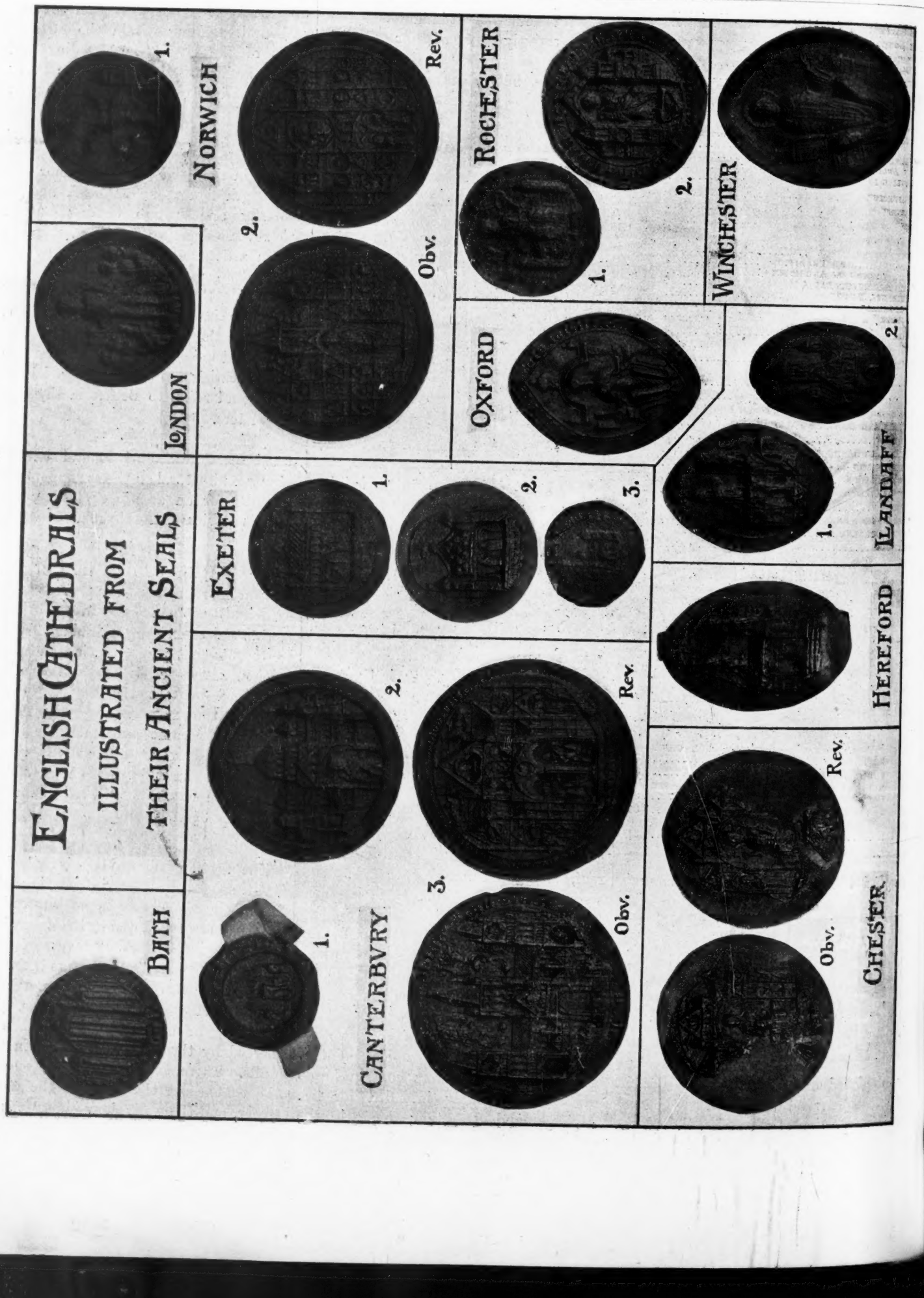
Exeter.

The most ancient seal of this cathedral is of special interest as showing the Saxon church. There is no impression of it in the British Museum, but a drawing is given in Oliver's "Lives of the Bishops of Exeter." It depicts the west front with two towers, the northern square and the southern circular, the latter surmounted by a cross, and pierced by three round openings in the walls. There are two porches, one in the centre and the other in the north tower, and the walls show indications of

characteristic Saxon masonry. On the central roof is a large flêche or turret of two stages carrying a weather-cock on a very tall shaft. The latter feature is a rare one in Saxon buildings, though it occurs more often in later work, as in the second seal of Canterbury mentioned above. One is shown on Westminster Abbey in the Bayeux Tapestry, and another is referred to as on Winchester Cathedral by the Saxon "Life of St. Ethelwold" in the Xth century. The two early seals of Exeter here illustrated both date from the end of the XIth century, but unfortunately are somewhat imperfect. The first has a church with a cresting of *fleurs de lys* on the hipped and tiled roof, two gable crosses, flanking pinnacles, an arcaded clearstory, and a double door with ornamental hinges, on either side of which is a quarterfoiled opening. The second seal shows an arcaded building standing on a stone plinth of four courses, and flanked by towers with conical roofs and ball-finials. The roof, which is surmounted by a large *fleur de lys*, exhibits a curious and unusual form of tiling. The third seal (1194–1206) depicts the west front of the cathedral in a very similar form to that on the early Saxon seal. There are two west towers, a central porch, and a large roof-turret, but the details are indistinct. Another view of the west front occurs on the seal of the Archdeacon's Official, 1267, but is not illustrated here. In this example there are three pointed towers, the central one carrying a cross and the other flags or vanes; in the doorway stands a figure of the Official.

Hereford.

The oldest seal, dating from about 1150, of a vesica shape and imperfect, is of much interest from an architectural standpoint, since the south view of the cathedral shown thereon is considered to resemble in some respects the old Norman west



front, especially as regards the masonry of the lower portion and the two west towers. This is probably one of the few cases in which we find an attempt to depict an actual building on an ancient seal, instead of a conventional design with figures of saints, etc. The view of Hereford shows a south door, a lantern turret, and a thatched pinnacle or turret at the west end.

Llandaff.

On the first seal, of XIIth-century date, is an indistinct view of the north front, showing a tall central tower, a lantern of two stages on the nave roof, and apparently an eastern apse. The north door and clearstory windows are roughly indicated. On the second seal (1230–1240) there is a much clearer view from the west, with very distinct Norman detail, especially in the arched openings of doors and windows. A central tower flanked by two turrets with cross-finials stands behind a large gabled porch and cross.

London.

St. Paul, standing on the roof of the cathedral, appears on the oldest seal of the diocese (XIIth century), as he does on the ancient seal of the City in the XIIIth century, but in the former case the architectural part of the design is not so prominent. The cathedral is represented by a small building with a long roof flanked by towers of two stages; there is a central porch and two windows on either side of it. On the second seal of XIIIth-century date, we have a west view (not shown here) with a roof-cresting of *fleurs de lys*, arcaded walls, and a pinnacled central tower, but the details are by no means clear.

Norwich.

The building shown on the earliest seal (assigned to the XIth century, but in use probably up to 1258) may be intended for the cathedral. On the second seal, however, dating from 1268, we get some fine and elaborate views on both obverse and reverse, in which the architectural details are excellently rendered and distinctly Early English in character. The obverse shows Bishop Herbert de Losinga standing in a large gabled opening beneath the central tower. Below him are the words, "Herbertus Fundator"; on either side are smaller towers, and all the wall surfaces are covered with niches and arcading. The towers have pinnacles and pointed roofs topped by cross-finials, and two censing angels appear in the sky. The reverse depicts either the north or south front of the cathedral with similar elaborate detail. The central gable contains a half-length figure of Our Lord in benediction within an octofoiled opening, and a bird stands on the roof on either side.

Oxford.

The oldest seal is that used by St. Frideswide's Priory before it was constituted Christ Church Cathedral by Henry VIII. It is a vesica in shape, of XIIth-century date, and exhibits a figure of the saint on a carved throne beneath a round-arched canopy, with central tower and side turrets. Though not connected with the cathedral nor shown here, we may mention the seal used by the great Abbey of Oseney near the city. It is of similar shape and date as that just described, and contains a figure of the Blessed Virgin under the round arch of a church-like structure with central tower and side aisles.

Peterborough.

The earliest seal, of the same century as that of Oxford, depicts the Abbey Church of St. Peter with a large central tower, beneath which the apostle is enthroned in a square-headed opening.

Rochester.

St. Andrew, the patron saint of the foundation, appears on the first seal (XIIth century), seated on a long building with a circular tower at each end. There are indications of an arcaded clearstory, and the towers have conical roofs with ball-finials, but the details are not clear. On the second seal (1459) the figure of Our Lord stands on a bracket held up by an angel under a wide gable, which is flanked by gabled and arcaded towers. On the outer sides of the latter appear other small towers, each with a pointed roof and cross-finial.

Winchester.

This ancient diocese possesses a very early seal of the XIth century. The figure of St. Swithun is seated on a curious throne resembling a roofed building with finials and windows. The curved finials are especially interesting as recalling the forms of similar features found in the unique timber churches of Norway, and it is not unlikely that this seal was influenced by Norse design, as we know that the Cathedral of Stavanger in Western Norway was founded by Reinald, an Englishman from Winchester, about the end of the XIth century, and dedicated to St. Swithun. The same saint appears on the Common Seal (*circa* 1294), the obverse of which contains his figure between those of SS. Peter and Paul, all within a church-like structure of three niches with canopy, buttresses, and corbels. On the reverse is a similar design enclosing a king and two bishops, beneath whom four monks kneel in prayer.

NOTES.

Capital and Labour. THE remarks of Sir Christopher Furness at a meeting of a shipbuilding company in the North a few days ago are worthy of the attention of all artisans. Sir Christopher pointed out that when capitalists, foreseeing bad times ahead, endeavour to "shorten sail" so as to weather the storm, they are immediately attacked by workmen as though they were inimical to them. Thus a manufactory, by a reduction of wages or of hands, may be kept going in bad times; if some such step is not taken then the only course is for the capitalist to cease for the time being from trying to use his capital. But the moment he attempts to take this course he is regarded as having some sinister object in view. Those engaged in building operations are peculiarly liable to these attacks, especially those who engage in speculative building operations. Of course, the best remedy for this state of affairs is some kind of automatic profit-sharing, for at the present time the elasticity of operations is unquestionably hampered, because capitalists have so much difficulty in making alterations either in the rate or in the hours of labour if circumstances change.

The Management of Electricity Supply Stations. IN spite of the present high degree of economical operation prevailing in the majority of central stations, the financial state of the average electricity supply undertaking cannot be regarded as entirely satisfactory. The only means of increasing profits is by the creation of demand for an increased output, which is not an easy task in the face of competition from gas companies, and the reduced consumption of current effected by metallic filament electric lamps. Some useful hints on the subject are contained in the paper read last week by Mr. R. Borlase Matthews to the Civil and Mechanical Engineers' Society. The author gives an analysis of methods for increasing the popularity of electrical energy, considering these in detail under the heads of good service, canvassing, and advertising. We agree with the author that central station managers ought to give greater attention to supervision and assistance in the maintenance of consumers' installations than has been the case hitherto. Another point not mentioned by the author, but raised in the discussion, is that electricity supply companies would be well advised if they followed the example of gas companies in trying to make easy the path of prospective consumers. There are far too many unnecessary restrictions on the part of some undertakings, the effect being that the more complaisant and more business-like gas companies are successful in extending the use of an illuminant which for many purposes is less desirable than electricity.

Metallic Filament Lamps. IN August, 1906, we announced the invention of new electric lamps made with metal filaments, which we thought would shortly displace carbon filament lamps. Our opinion was based on the results of exhaustive tests which had been made on these lamps by the German Reichsanstalt. These "Osram" and "Tungsten" lamps are now familiar to almost every user of the electric light all over the world. We pointed out that an obstacle in the way of their general adoption was their high candle-power, as some consumers prefer to use a low candle-power carbon lamp to a high candle-power Osram lamp, although the latter may really be more economical. Certain German manufacturers have now placed a 16-candle-power high voltage lamp in the market. Its cost is only two shillings, or little more than double that of the ordinary carbon lamp, but as it only takes one-third the current of the latter the meter-bills will be reduced to one-third their former value, and hence the saving in the cost of the electric light will be well over fifty per cent. On inquiry we find that it is not yet possible to obtain commercial deliveries in this country, and the agents state that they are unable to fix a date. In our opinion, however,

when the present stock of high candle-power lamps is nearly exhausted low candle-power lamps will be forthcoming. We notice that there is a general reduction in the price of metallic filament lamps abroad. We also notice that the "Zirkon" Company are advertising a new lamp, which effects a 30 per cent. saving as compared with Osram lamps, but we have not yet had an opportunity of testing this "double Z" lamp. The great reduction in the price of the electric light caused by the recent very considerable improvement in the efficiency of the filaments ought to lead to its more general adoption. The methods of the distribution of electricity must be modified appreciably if full advantage is to be taken of the latest discoveries of the German physical chemists.

The New Selfridge Building.

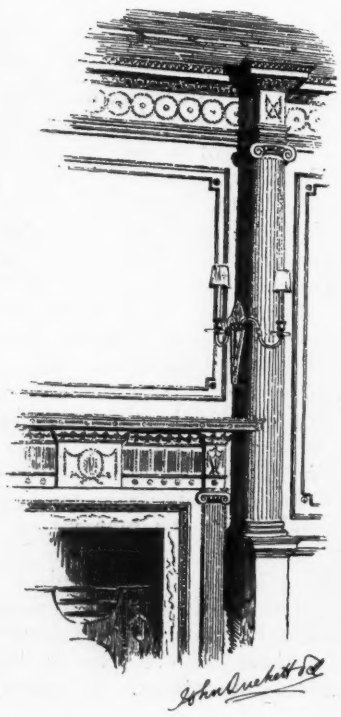
ON Monday last were opened Messrs. Selfridge & Co.'s new premises in Oxford-street. In our issue for January 23 a detailed account of the building appeared in connexion with the visit of the Architectural Association. The design of the elevations is as much of a novelty as the venture itself. With one or two exceptions, it is the first large shop building in London in which the architecture (we use the word in its modern and restricted sense) bears any relation to the methods of construction employed. The lines of support are carried right up from the ground; the superstructure is not poised to all appearance upon the upper edge of huge sheets of plate-glass, hanging, like Mahomet's coffin, betwixt heaven and earth. Between the large column of the main order, what space is not occupied by the windows is faced with cast-iron. This method of emphasising the vertical supports by a stone casing in the guise of a column, elsewhere leaving modern methods to speak for themselves, is a bold innovation, and upon right lines. The effect of the large order is, to our thinking, somewhat marred by the giant frieze containing the fourth-floor windows; nor, in general, is there sufficient solemnity for so large a scale—a defect, it is true, shared by most of the important colonnade façades erected in London within recent years. The interior is disappointing, the same Ionic caps do duty on every floor; as the heights diminish in the upper floors, the details which were in good scale for the ground floor become distressing. We give three sketches which serve to give some idea of the luxurious manner in which the comfort of customers is catered for. Rooms are set apart for the use of American, Colonial, German, and French visitors respectively, each room being decorated in an appropriate style, primitive simplicity, apparently, being the atmosphere in which modern America finds herself most at home. The roof-garden is extremely pretty and refreshing, though the chimneyscape seen through the jalousies of green matting is rather an abrupt transition from an Italian pergola. We congratulate Mr. R. Frank Atkinson on his contribution towards the salvation of modern "business" architecture.

In the German Room—

The Roof-garden—

SKETCHES AT SELFRIDGE'S.

Chimney-piece in the Colonial Room—



John Cuchet ltd

The Corrosion of Iron.

IN a paper read to the Boston Society of Arts Dr. William H. Walker, of the Massachusetts Institute of Technology, deals with modern methods of preventing the corrosion of iron and steel. Proceeding on the lines first indicated by Dr. Cushman, the author shows that the speed of corrosion increases with the percentage of impurities present in the metal by establishing electric currents due to the potential differences between various points in the metal. Experiment has demonstrated the important fact that steel containing not more than $\frac{1}{2000}$ of its bulk in the form of impurities is capable of resisting corrosion quite as well as the wrought-iron of our forefathers. The unduly corrodible nature of modern steel is well known, and we hope that steel-makers will show themselves ready to eliminate the foreign substances which Dr. Walker has found to be the main source of trouble. Another point brought out in the paper is the decrease of corrosion effected by the presence of alkali in water gaining access to iron and steel. This fact has an important bearing on the question whether concrete will protect metal from corrosion. Inasmuch as the setting of Portland cement is accompanied by the liberation of caustic lime, and good concrete is thereby saturated with strong alkali, Dr. Walker concludes that iron and steel will not corrode when embedded in concrete. Subject to the qualification that the concrete is good in every respect, this conclusion is undoubtedly correct, as evidenced by ample experience in practical construction.

A Boulevard in East London.

LORD COLEBROOKE, the lord of the manor, has agreed to sell to the Stepney Borough Council for, we understand, 1,500*l.* his surface rights in Mile End Waste, and for 4,000*l.* his rights in the wholesale market in the Borough. The Borough Council propose to obtain an Act to enable them to convert the waste lands along the sides of Whitechapel and Mile End roads into a boulevard, with trees and gardens, due regard being paid to the interests of the present stallholders. It is understood that under the scheme the existing wholesale market will be offered to the London County Council. The market for hay and straw is, we may add, of ancient foundation, without metes or bounds, but with an area of market franchise which extended to the whole parish within the manor. The Act 11 George III., c. 15 (1770) contains a recital that the lord of the manor of Stebonheath, or Stepney, as proprietor of the market, was entitled to twopence of the sixpence paid as dues in respect of every cart or wagon loaded with hay or straw and brought into the parish of St. Mary, Whitechapel, and sold there on the usual market days. In a suit which was brought as a test case to determine in what streets the hay and straw traffic could be legally held the Court of Appeal (September, 1907) held that the market is *in sive juxta*

High-street, and that whereas salesmen have no right to place their carts where they choose, market rights do exist in certain adjoining thoroughfares—Leman and Commercial streets and Commercial-road.

Moving Platforms for New York.

IN addition to the construction of several short subways recommended by Mr. B. J. Arnold, engineer to the Public Service Commission, it is proposed by a business firm to construct eight lines of moving platforms, chiefly in subways beneath some of the most busy streets of New York. Mr. Arnold reports favourably on the project, and considers that passengers can probably be carried more economically by platforms than by railway trains. One great objection to the moving platform at the Paris Exhibition of 1900 was the excessive noise it caused, and we believe the same fault existed in connexion with the platform at the previous Chicago Exhibition. It is now stated on the authority of Mr. Arnold that this and some other defects have been entirely eliminated. Of course, a moving platform cannot be perfectly silent, but there is no reason why it should not be much less noisy than an electric railway train. The general convenience of a continuous conveyor plant for passengers is obviously very great, and the proposal now before the Public Service Commission of New York deserves favourable consideration.

The Regulation of Lake Superior.

AT the present time the effect of works executed in the outlet channel of Lake Superior, near Sault Sainte Marie, for the benefit of navigation and for the utilisation of water-power, has been to lower the level of the great inland sea. The prejudicial influence of the water-power undertakings is generally admitted, and proof of their undesirable nature is afforded by the fact that in January last a Bill was introduced in Congress providing for the vote of 50,000*l.* towards the cost of abolishing the works at Sault Sainte Marie. A more comprehensive scheme, however, is being seriously discussed in America, its object being the construction of regulating works, by which Lake Superior would be converted into a huge storage reservoir, the idea being the same as that involved in the proposed regulation of the head waters of the River Nile. By exercising control over the outflow from Lake Superior the waters could always be maintained at a high level, and so the enormous area of the lake would be available as a reserve for supplying deficiencies in the lakes below during periods of small rainfall. If carried into effect this project will certainly represent one of the greatest efforts ever made for the purpose of controlling the forces of nature.

The Reading of Papers.

WE are too often reminded, at meetings of architectural societies, that it is one thing to write a paper that is of value and interest in itself, and another thing to read it so as to bring out its interest. A paper which is inaudible to the larger proportion of the audience might as well not be read at all; and it unfortunately happens that sometimes the best writers of papers are among the worst readers of them. The Institution of Civil Engineers, foreseeing the difficulty that would arise from having to depend on the chance of the author of a paper being a good or a bad reader, made it a rule long ago that all papers were to be read by the Secretary, whose reading could be depended on; the author or his representative merely undertaking to point out the diagrams as they were referred to. We recommend this precedent to the consideration of the Councils of our Societies. Its adoption would save us occasionally from some painful and unprofitable evenings.

Pictures by the late Spencer Stanhope.

AT the Carfax Gallery is a collection of the pictures and drawings of the late R. Spencer Stanhope, which should have a special interest for architects. For Stanhope was essentially a decorative painter, and in fact frequently co-operated with Mr. Bodley in church decoration; and among the paintings in this small collection is a remarkable "Study for a Reredos," a combination of paintings with traceried and gilt architectural canopies. And architecture takes a considerable part also in the backgrounds of his figure paintings, as in "My Lady of the Watergate"; architecture treated in a quaint mediæval fashion, but of considerable interest in its way. Stanhope (whose art was evidently considerably influenced by that of Burne-Jones) was frankly an imitator of the feeling and manner of the earliest Renaissance painters, and his paintings in this sense are archaisms; but there is a sincerity and earnestness about them which raise him above the category of mere imitators of early art. He painted the frescoes in Marlborough College Chapel, and those in the Anglican churches at Florence. He should have been a very good designer for stained glass, though we do not find any record of his employment in that branch of decorative art. In spite of his archaism, he was an artist with high aims and an evidently sincere love of art.

Unwritten History.

AT the annual meeting of the Architectural Association Camera Club on Wednesday evening Mr. Needham Wilson read a short but remarkable paper on "Unwritten History in Architecture"; not the history of the development of mouldings or other architectural features, but the tale which some buildings told, when carefully examined, of the state of the country, of events which had influenced or interrupted their building, etc. He gave several instances in point in the case of mediæval buildings (the names of which were purposely withheld, perhaps to induce the students to find them out for themselves), and subsequently gave a most interesting illustration on the blackboard of the manner in which the original plan of a mediæval church was recovered on the mere suggestion given by the fact that one buttress had been rebuilt for no immediately apparent reason, and that there was evidence that it had once been an angle buttress and been rebuilt at right angles to the wall. The moral of the paper was that one should look carefully at little peculiarities in the condition of masonry, even apart from any architectural feature, and endeavour to realise the circumstances which caused them; and that a knowledge of events in general or local history was important towards the full understanding of the history of buildings.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE usual fortnightly meeting of the Royal Institute of British Architects was held on Monday at No. 9, Conduit-street, Regent-street, W., Mr. Ernest George, President, in the chair.

Mr. Alex. Graham, Hon. Secretary, announced, with regret, the decease of a distinguished corresponding member in M. Alfred Nicholas Normand, who held the Prix de Rome about 1850.

American Architecture.

Mr. Francis S. Swales then read a paper upon "American Architecture; with Special Reference to New York and Washington." The first part of the paper went with considerable detail into the circumstances under which Washington was selected as the capital of the United States, and the architects appointed to plan the city and the Government buildings; points not decided till after a good deal of political polemics and wirepulling.

Jefferson, the versatile Secretary of State, who had been himself an architect, visited Europe, arranging diplomatic relations and collecting books, plans of buildings, and maps of cities. The last he supplied to Major L'Enfant, and it might be, in view of the maps selected, namely, Paris, Orleans, Turin, Milan, Strasbourg, Carlsruhe, and Frankfort, and the fact that L'Enfant was an accomplished military engineer, that it was at L'Enfant's request that the maps were obtained, and that he was probably familiar with these cities and knew something of their best features. It is probable, also, that he knew of the various works of Le Notre. However this might be, he evolved from his study of them a plan for the city of Washington that was at once original, practical, and beautiful, and to which the city will ultimately conform.

L'Enfant's plans were, during his lifetime, carried out only so far as securing sites for the principal Government buildings, cutting down trees, and making a few of the principal roads. All available land was bought up by speculators, who held it at high prices and thus retarded the growth of the town. L'Enfant refused to permit the speculators or land companies to have his plans, saying that they would spoil the city with their cheap buildings, and this attitude, coupled with his quarrel with Carroll, led to his dismissal.

The personal interest which Washington and Jefferson took in the planning of the city and in the selection of sites for important buildings extended also to the selection of designs for the buildings; and in 1792 a competition was held to procure a design for the Capitol, and sixteen designs were submitted, but none was regarded as being fit for serious consideration, and all were returned by Jefferson to their authors. Shortly afterwards a French architect, Stephen Hallet, of New York, presented a design to the Commissioners which met with general approval, and he was asked to journey to Washington to examine the site and perfect his design. About the same time Dr. Wm. Thornton, a Philadelphia physician and amateur architect, who had studied in Paris, presented an elaborate coloured design to President Washington, who was so impressed that he asked the Commissioners to adopt Thornton's design in place of Hallet's. Hallet declared that Thornton had stolen some of his rough sketches and merely elaborated upon them. This charge Thornton vigorously denied, and the premium originally

offered for a design was awarded to him. The Commissioners (no doubt at Thornton's instigation) requested Hallet to turn over all his drawings to them, which he flatly refused to do, and they could all sympathise with him. He was therefore dismissed. George Hadfield, an Englishman, succeeded Hallet, but he, too, was badly treated by the Commission, and was forced to resign. A competition was also held for the President's house, and this was won and carried through by James Hoban, an Irishman, who had been a clerk of the works under Hallet. The President's house is a modest though large and rather monumental residence, belonging to the early type of the classic revival in England.

After the dismissal of Hadfield, Hoban, the architect of the President's house, was next called in to continue the work. He completed the north wing of the Hallet-Thornton design, which is now part of the central block, in the year 1800. Three years later Benjamin Latrobe, a pupil of Cockrell, was appointed to construct the south wing and reconstruct the work upon the north wing which had been poorly executed under Hoban. He did both in accordance with his own plans, which did not differ materially from those of Hallet, Thornton, and Hadfield. He completed both wings in 1811, and built a kind of gantry between them.

In August, 1814, the British troops took the city of Washington and burned the Capitol, the President's house, and other public buildings, besides much private property. The walls of the Capitol and of the President's house withstood the flames. Latrobe, who was at the time in Pittsburg, was summoned by President Madison to return to Washington, and he proceeded with the restoration of the Capitol. To him was due the credit of designing the former House of Representatives—now known as Statuary Hall—and the old Senate Chamber, used at present by the Supreme Court of the United States, and the old lobbies. He designed a low dome and the central portion of the east front, consisting of the colonnade and the pediment. He resigned in 1817, and was succeeded by Charles Bulfinch, of Boston, who was the first American-born architect employed on the Capitol. Bulfinch designed the hall of the old Library of Congress, which formed the projecting central feature of the west front, modified Latrobe's design for the dome, and designed the west front very much like the front of the Boston State House, of which he was also architect, and in 1827 reported that the Capitol was finished. The building completed by Bulfinch was, with the exception of the dome, what to-day constitutes the central block. When Bulfinch handed in his report that the Capitol was finished he retired to Boston, and Robert Mills, designer of the old Pennsylvania State Capitol, succeeded him as a sort of resident architect or clerk of the works, but for twenty years nothing further was done to the Capitol.

In 1833 the old building of the Treasury was destroyed by fire. Mills was appointed to design a new one. It was intended to locate this department in what is now called the Mall—the park which in L'Enfant's scheme was to be traversed by West Capitol-street and made into a grand avenue; but Mills took so long deciding upon the site that President Jackson—a soldier by profession and something of an old ruffian—lost patience with him, due to his continued procrastination, and, it is said, meeting the architect just outside the President's house one morning, he planted his cane at the spot where he was standing, and said, "Here, right here, is where I want the corner-stone laid." And it was. The building as erected breaks Pennsylvania-avenue and obstructs the vew from the President's house to the Capitol and *vice versâ*. The selection of this site was a serious blunder and a frightful blot on L'Enfant's plan. The original portion was big, costly, and commonplace. Jackson's appointment of army engineers to construct Government buildings was partially justified by the dearth of good architects. The commercial undertakings everywhere called loudly for the help of all the brains in the country; there were doubtless plenty of opportunities for architects who could have shown themselves competent to grapple with the problems of the times, but if a design for a church was required a Greek Ionic temple was presented, if a railway-station a Greek Doric temple was considered the thing—by the so-denominated architects—and not only the President, but the railway companies and business firms placed their buildings in the hands of men who, if they knew little of engineering, had at least the advantage of knowing nothing about the works of Stuart and Revett or "Greek" Thomson.

In 1850, when the increase in representation in Congress made important extensions to the Capitol necessary, Thomas U. Walter, of Philadelphia, was practically the only architect left who could be entrusted with this great task. Walter was a classicist, but used the orders with intelligence, refinement, and effect. He was also an able, practical planner, and withal an artist competent to compose both as to plan and perspective. Between the year 1850 and towards the end of the Civil War he planned and carried out the extensions and dome of the Capitol as it exists at present. His plan consists of three blocks. The central one, which embodies the needs and aspirations of the formative period of the American nation; of two newer ones, a north wing and a south wing, containing the two houses, each linked to the old block—the old home of both houses. It is indubitably a practical arrangement, designed to afford the best lighting to the new wings and to shut out as little as possible from the old structure; but there was also a beautiful symbolism about it. Walter saw the two houses—the Northern States and the Southern States—widely separated, housing two different representations of the people, yet each essential to the existence and continuance of the other. He saw in the old building the expression of half a century of common effort and common accomplishment founded upon the old plan representing the Constitution of the United States; common ideals crowned by that ornament of achievement, Unity, represented by its dome. First he planned and constructed the two wings and linked each to the old building—the two great wings of white marble were seen to predominate, to assert their importance over the old structure. He then proposed a larger dome—an emblem of a greater unity, a greater objective, one that would be powerful enough to draw the two into closer relations and harmony with each other—and to mount this emblem of a great Amendment upon the old base of the Constitution, and, finally, to bring the old structure up to the quality of the new, in appearance at least, he found it expedient to give the old substructure a coat of white paint; but he planned for the reconstruction of its front in the same enduring and beautiful materials of which the wings had been built. He saw weaknesses in the substructure that would not permit him to construct his dome of the same material as the wings, so he built it of cast-iron, and, like the Amendment, which gave the slaves their freedom and the suffrage at the same time, it overhangs its substructure and is unpleasant to behold from many points of view. But when the American Institute of Architects was formed (patterned upon this Royal Institute) Thomas Ustick Walter was selected to be its first President. He was the last representative of American architecture as it was.

The architecture of the present in the United States might be said to have begun with Richard Morris Hunt, whom this Institute honoured as the first American to whom it awarded, in 1893, the Royal Gold Medal. Hunt, when he returned to the United States in 1855, had been for ten years a student in the Ecole des Beaux-Arts in the atelier of Hector Lefuel. On his return to New York he found two or three architects endeavouring to resuscitate Gothic architecture by attempting to follow the so-called Gothic revival—or should we say Gothic post-mortem?—in England. Upjohn had built Trinity Church with a great steeple, typifying Religion dominating over New York—a stone exterior of pleasing design, fit to go with an old English village, and a vaulted interior in plaster! There were one or two other examples of this same sort of thing—a kind of old-world scenery, planted in little parks, amidst Greek temples serving as sub-treasury, hotel, and theatre. Hunt set to work vigorously to change things. He started an atelier, in which he had as pupils Mr. George B. Post and Charles Gambrill, Professor Ware and Henry Van Brunt. All of these pupils turned to the brand-new "Gothic." Upon the return to the United States, in 1870, of Henry Hobson Richardson, who had studied for several years in Paris, the firm of Gambrill & Richardson was formed; and in this office the late Stanford White worked as a draughtsman before he, too, went to Paris to study. Hunt had endeavoured to work in the *neo-grec*, but seems to have found it an uphill task, and, in spite of his best endeavours and his uncompromising contention against engineers designing architectural work, such buildings as the State, War, and Navy Departments at Washington, the Capitol at Albany, and the Philadelphian City Hall went merrily on. Richardson returned after the war was over. At the time that the country was being fairly inundated with fortune-seekers and adventurers from all parts of the world Richardson almost immediately caught the rough, vigorous spirit of the times, and his Trinity Church at Boston, Court-house and Gaol at Pittsburgh, and Chamber of Commerce at Cincinnati, attracted the attention of the public to the difference between the work of the architect and that of the engineers and builders.

Everybody wanted his building, whether a court-house or church, railway-station or gate-lodge, in "the Romanesque rock-faced style." An architect's client, who was wealthy but without taste, was described in the architect's office as being "rich and rock-faced." Richardson's work extended all over the country—even to Washington, where he built the residence of the late Secretary of State, then Colonel, John Hay. His design for the Cathedral at Albany was perhaps his greatest work, but the building, a commonplace Gothic structure, was not erected from his design. He died in 1886, and his influence upon the architecture of the country terminated when, in 1888, in the competition for the huge Cathedral of St. John the Divine, a Renaissance design by Messrs. Carrère & Hastings was placed first by the assessor over a number of the most original, impressive, and imaginative works that had been produced in Richardson's style.

Hunt, who found his taste for classic work opposed by the wave of Gothic and "Picturesque" popularity, had meantime compromised with the public by taking into association with himself Henry O. Avery, and together they produced the design for the William K. Vanderbilt house, Marquand house, and others in the French transitional styles of Francis I. and Louis XII. The Vanderbilt house was very successful, one of the most charming designs we have seen, either old or modern, in the style. Henry P. Kirby, of New York, produced some fine imaginative studies in this style, which he published in his book of "Compositions"; and a number of strong men were won over to the style of the early French Renaissance.

The Columbian Exhibition afforded an opportunity, for the first time, of bringing together the combined artistic abilities of

several of the then leading architects of the country. Again, the best work owed its inspiration to French designs. From the time of this Exhibition down to the present day the history of the development of American architecture disclosed a rapid march of progress. The classic influence, re-established in the public favour by the Exhibition, had been maintained, and had been accepted in one or another of its manifestations throughout the country. Numerous architectural schools had been founded; and the old ones at the Cornell, the University of Illinois, and the Massachusetts Institute of Technology improved their courses of instruction, modelled in principle upon that of the great school of Paris. The atelier system, first attempted by Richard Hunt, was successfully inaugurated about fifteen years ago by Mr. E. L. Masqueray, since Chief Architect of the St. Louis Exposition, who was at the time Hunt's chief assistant, and has been fostered by the Society of Beaux-Arts Architects, which has made its principal objective the education of the younger men. The Architectural League of America—a society composed of societies—whose members are the various architectural clubs, which, in several of the large cities do auxiliary work to that of the Society of Beaux-Arts Architects, especially as regards the education of those office-trained men whose circumstances prevent them from taking a regular course in one of the Universities. These had given birth to, and rocked the cradle of, the American architecture of the future.

Mr. F. M. Simpson, in moving a vote of thanks to the lecturer, said Mr. Swales was peculiarly qualified to read such a paper, for he was himself one of the brilliant staff of designers who was responsible for the St. Louis Exhibition, and was an old pupil of Pascal at Paris and of the atelier of Masqueray. It hardly fell within his province to discuss the paper, which was, however, an admirable description of the work which was going on in America. One could only appreciate the excellence of the designs which had been put before them and the work which was being done by the leading men in America now. It was an old-fashioned principle in discussing a treatise of any kind to endeavour to draw some sort of moral from it, and he felt that the moral to be drawn from Mr. Swales's paper was the wonderful influence that the French education of American architects had had upon their designs. The jump which had been made since the time that Hunt first came back from France was marvellous, and the adaptability of the pure classic work to modern needs was exemplified in an extraordinary way in American work. Here they had a practical nation dealing with vast commercial interests and building huge monumental erections, and yet the architects grafted upon their own gigantic needs the tradition, training, and an exact knowledge and delicate feeling for classic beauty which they obtained from France. There was one point upon which he would particularly like to draw the attention of the President of the Institute to, and it was what the author had said with regard to what the authorities in charge of the improvements at Washington had been able to do. There they found the great railway-station of the Pennsylvania and the Baltimore and Ohio Railways, which stood right where they wanted to run the Great Central Avenue. The authorities sent their architect, Burnham, to the railway companies and asked them to pull up their railway and shift it out of the way. The most extraordinary thing was that the railways did it, and not only that, but they commissioned Mr. Burnham to build the magnificent station they had seen on the screen. He wondered whether their President could do anything with the Charing Cross railway people on similar lines. Perhaps he might get both Charing Cross station and the bridge at Ludgate Hill removed and get a commission to design them for the other side of the river.

Mr. John Slater seconded the motion, and remarked that it made them green with envy to hear of a young man going over to America with a design of an enormous scheme, like the new Admiralty buildings, and simply submitting it to the authorities and getting it accepted. They would be glad to duplicate that state of things in this country.

The Chairman, in putting the vote of thanks, observed that it was delightful to think that there were people other than architects willing to make sacrifices to secure a fine building scheme, but he was afraid it would be long before they in London would do similar things.

The motion having been agreed to,

Mr. Swales, in reply, said he thought Mr. Simpson's idea with regard to Charing Cross Station was an excellent one. He believed Mr. Sprague had designed a scheme for remodelling St. James's Park, although he had not submitted an estimate. These ideal schemes were interesting and worth doing, and it was unfortunate that there was not some school in this country where such things could be done. In Paris, at the Ecole, they had large monumental schemes brought out in the regular programmes, and the prizes offered always brought out some design for the improvement of Paris or some other part of France.

The Chairman announced that the next meeting would be held on Monday, the 29th, when Mr. Spielmann would read a paper on "British Sculpture."

A RICHMOND IMPROVEMENT SCHEME.

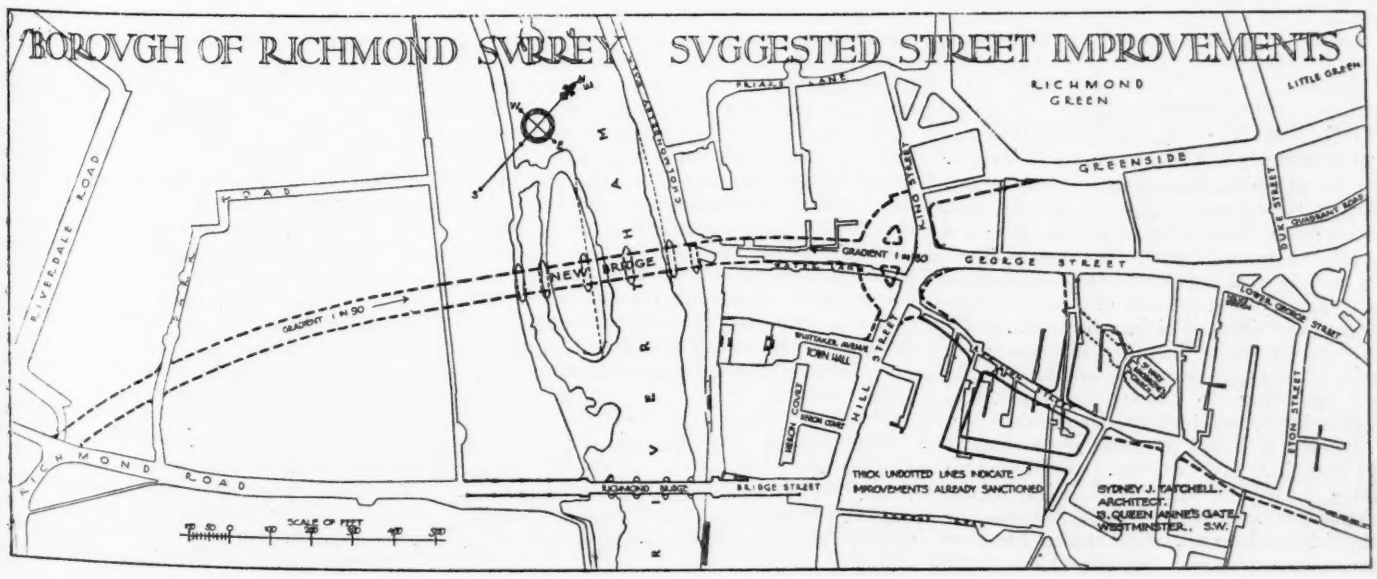
THE plan here given shows a scheme which has been proposed by Mr. Sydney J. Tatchell, architect, for the improvement of Richmond, including the provision of a new and wider bridge, with a better gradient of access, a little way below the existing bridge, leaving the latter untouched. We are glad to illustrate and support any scheme for a Richmond improvement which involves the permanent safety of the existing bridge. These fine XVIIIth century stone bridges on the lower Thames are among the great beauties of this portion of the river; there is a noble and dignified style about them as well as considerable historic interest, and the tendency of local corporations in these days to talk about the necessity of rebuilding them ought to be by all means combatted. In one case this imagined necessity has proved to be entirely a delusion; we were told that Kingston Bridge must be pulled down and rebuilt on a wider scale because tram-cars were required to go over it; strong representations were made from various quarters against the destruction of the bridge; these appeared to have received more attention than is usual in such cases; the bridge has been preserved, the tram-cars go over it, and no one seems any the worse.

A similar proposal has been made in regard to Richmond Bridge, which is said to be too small for the traffic. We have never seen, during many visits to Richmond, any such amount of wheeled traffic over that bridge as would justify the complaint that it was insufficient in width; but we admit that the gradient of the approach on the town side is a very bad one. Mr. Tatchell's plan, which contemplates the development of a new central line of route through the town leading up to a new bridge with a level approach, would get over all difficulties, leave the present beautiful bridge untouched, and constitute in itself a very important public improvement to the town.

We may add the architect's own explanation of the objects of his scheme, as follows:—

"In studying a map of Richmond in conjunction with a survey of the town itself it is at once apparent that there is a total absence of what may be termed a 'centre.' George-street, the principal thoroughfare, has no suitable termination; the parish church is lost in alley-ways; and the town hall, which in most towns equal in importance to Richmond is situated in the central square, or in a dignified and commanding position in the main thoroughfare, is here approached from George-street through the narrowest portion of Hill-street, and has neither a central position nor a dignified approach. The bridge, moreover, is at right angles to the main roads on the Richmond side, dangerously graded, and for its present traffic quite inadequate.

The problem, therefore, is to design a central treatment, which in some measure will deal with the difficulties indicated.



The scheme now put forward preserves George-street as the principal thoroughfare, and shows new approaches and a bridge somewhat on the lines suggested by Mr. Courlander and Mr. Partridge. The principal feature is the quadrant, which is designed to afford a dignified and architectural termination to George-street, and at the same time a fitting setting for the bridge approaches. This quadrant will create unique and valuable frontages for business premises, where at present only comparatively unimportant property exists. It will further provide space for triangular islands, on which trees may be planted and grass and flower-beds laid down. Public statues would also find a place here.

Paved-court, the nearest means of access to Green-side, is proposed to be widened to form a road 40 ft. wide, which will serve as a valuable route for the trams in the future and in any event relieve George-street of a large amount of unproductive traffic. On the south-east side of the quadrant it is proposed to widen Hill-street to 55 ft. as far as the town hall. This will give an added importance to Hill-street and considerably improve the approach to the municipal buildings. The junction of the proposed new Red Lion-street with Hill-street will, in the present scheme, have a rounded corner on its south-east side for reasons which, from a study of the plan, are obvious.

The new bridge is shown with three large spans about 90 ft. each, two of which will form (with the navigable channel of the Thames slightly widened) up and down riverways, the third spanning the island. A narrow arch under each extremity of the bridge gives the necessary free passage for mooring and loading purposes.

An important point in dealing with the bridge is that of gradients. Nothing could be more unsatisfactory than the uneven levels of the present bridge approaches, varying as they do from 32·8 at George-street, to 48·7 at the top of Bridge-street, thence a drop to 33·8 at the north-east end of bridge, a rise to 36·6 at the centre, and a fall to 27·2 and 18·0 on the opposite side. In considering the levels for the new bridge it will be seen that an easy and even gradient is obtained on the Richmond side from George-street of 1 in 130, and on the Twickenham side 1 in 90. These levels give ample headway under the bridge on the embankments, and also for an archway over Willoughby-road.

It may be mentioned that Water-lane would be retained at its southern end for approach to the Waterworks, etc., but valuable frontage would be created on the bridge approach on both sides, on the west to its full extent, and on the east for a portion of its length.

The Council have already in hand the improvement of the Red Lion-street area, and it is suggested in this scheme to continue the proposed new road on the north-west of Red Lion-street into George-street, where Victoria-place now is. A very desirable means of approach from this road to the church could be arranged, as shown on the plan, but it is feared that there are many difficulties in the way of such a road, not the least of these being the burial ground through which it would have to pass.

These suggestions are put forward to assist in formulating a set scheme towards which developments in this part of Richmond may tend. An architectural treatment in harmony with the Georgian character of the best original work in the Royal Borough should be aimed at in the design of any buildings in connexion with the scheme, and so far as possible the characteristic simplicity and charm of the present artistic but inadequate bridge should be preserved in the erection of the new structure.

The present time appears to be very opportune for carrying out a scheme on the lines here indicated, having regard to the fact that the Council now hold the piece of ground (at present vacant) at the top of George-street and immediately on the site of the proposed quadrant, which if utilised in the way now put forward, will form the basis of an improvement worthy of the Royal Borough of Richmond.

SYDNEY J. TATCHELL."

THE SURVEYORS' INSTITUTION:

THE GROWTH OF LONDON IN SIZE AND VALUE.

IN his paper read at the Surveyors' Institution on the 8th inst., under the title "Giant London; the Solution of a Great City; Its Growth in Size and Value," Mr. George Head gave a very full and picturesque summary of the history and growth of London from the earliest times, which, however, would occupy more space than we can spare; we must confine ourselves to the portions of the paper referring to modern London. In commencing his subject Mr. Head said:—

"London is in all probability the largest city that has ever existed. We have no reliable records of the great cities of the ancient world, such as Thebes, Babylon, or Memphis, but I do not think that it has ever been seriously urged that they rivalled London in actual size. However much they may have surpassed her in monumental endurance, or in grandeur of architecture, they did not even approach the huge bulk of our great metropolis. I doubt if anyone here, or indeed any of her inhabitants, has an adequate idea of the tremendous size of London.

Many of us pursue our daily task of surveying, buying, and selling in some corner of London with which we happen to be connected. The district seems large, it absorbs all our time and energy; it is a little world in itself, it probably has its own local government, its own railway-stations, its markets, and its various grades of residential houses. It may have an area and a population equal to that of a first-class provincial city, and yet there are twenty such in London.

The distances, too, are so immense, that a man may walk for three or four hours, going direct from point to point, with houses, houses, all the way, and one can as quickly get to Brighton as to the other side of London.

Let us consider the Administrative County of London. This is really only a part of the whole, for it excludes such large districts as Cricklewood, Willesden, Acton, Ealing, Brentford, Chiswick, Barnes, Wimbledon, East and West Ham, Leyton, Walthamstow, Hornsey, Wood Green, Tottenham, and Clapton, but it serves to furnish us with a defined area as to which certain statistics are published. If those in this room were asked a few elementary questions on the statistics of this Administrative County of London, I wonder how many would be bold enough to give such figures as the following:—

Statistics of the Administrative County of London.

The area is 74,839 acres, or 117 square miles.

It has 329 railway-stations.

It contains 2,134 miles of streets, and 632,591 houses. In these five millions of our fellow-creatures are sheltered and work out their destiny.

The figures are bewildering; they are too large to convey a clear idea to our minds, but we may be able to appreciate them by taking a standard which we can more readily apprehend. Think of Brighton and Hove with their three miles of sea frontage, and the mass of houses reaching back to Preston Park; the area is three square miles, and the population 129,000, so that to equal London we should want thirty-six Brightons. . . .

Georgian London.

The maps of the closing years of the Georgian period show us St. Marylebone built on as far north as Regent's Park, and a solid mass of houses reaching from Hyde Park to Stepney, bounded on the south by the river, and on the north by Regent's Park, Somers Town, Pentonville, and Shoreditch, with lines of houses creeping out in every direction. South of the river Southwark is now a town in itself, but the development of the southern suburbs is as yet hardly began.

In this huge town of Georgian London there resided over 1,000,000 souls, and if the statesmen of Elizabeth who advised that steps should be taken to prevent London from increasing its then 'prodigious' size could have seen their city enlarged to six times the greatness of the place they knew they would have been lost in astonishment that any place could be so vast; and had their contemplation lasted but a few years longer they would have been destined to suffer a still greater surprise, for now in these opening decades of the XIXth century we are on the eve of the greatest development of all.

Victorian London.

Building, which had received a check in consequence of the expense of the Napoleonic Wars, found fresh stimulus on their conclusion. Within the next few years Victorian London witnessed the covering of the whole of the northern portions of Marylebone, St. John's Wood, Camden and Kentish Towns, Clerkenwell, Hackney, and the northern suburbs. To the west, Paddington, Bayswater, Notting Hill, Pimlico, Chelsea; to the east, Stepney, Limehouse, and Poplar; and to the south Greenwich, Lambeth, Peckham, Camberwell, Brixton, Stockwell, and Clapham. During the latter half of the century the great increase in railway and other means of traffic stimulated development to such an extent that not only were the areas I have mentioned more thickly and completely covered, but other large districts sprang into being; and still others, which until then were small hamlets, grew out of all recognition and became merged into the topography of the vast metropolis.

Edwardian London.

The district known as the Administrative County of London includes an area of 117 square miles, but the whole of it was covered with buildings, no open spaces being left except the parks, and the population increased from 2,800,000 in 1861 to 4,800,000 in 1907.

Not only so, but London has passed the ample boundaries of the Administrative County and overflowed the Urban Districts of Brentford, Acton, Ealing, and Chiswick; Willesden and Finchley; Hornsey and Wood Green; Tottenham and Ilford; Walthamstow, Leyton, East and West Ham, and Barking; Beckenham and Penge; Kingston, Richmond, and Wimbledon—these alone having a population of one and a half millions and an area of 100 square miles. Yet even this wide range does not put a period to the growth of the metropolis; along every main road it pushes its feelers, and far beyond the boundaries of the urban districts the houses stretch almost without a break to Southall, Edgware, Barnet, Enfield, Woodford, Romford, and even Croydon and Surbiton. We watch it growing—ever growing—and we know that it must still sweep onwards and outwards, in ring beyond ring, adding suburb to suburb, and town to town until—Who among us will dare to complete that prophecy?

Increased Value.

But if the increase in the area of London has been remarkable, the growth in value is no less extraordinary. If we could compare the present rentals of land with those which prevailed even at a comparatively late stage of London's history, the differences would savour of romance. When we think of the six horse shoes paid in the reign of Edward the First and still paid by the Corporation of London as the rent of a piece of land in St. Clement Danes near the present Law Courts, the freehold of which is now worth three or four pounds for every square foot of surface; when we think of the lands allotted to provide small annual sums for charity which now year by year produce a princely revenue devoted to the same end; when we learn that since 1339 the rateable value of the City of London has increased from 12,000*l.* a year to more than 5,000,000*l.* a year, or 400 times as much, it sounds as if the countryman's faith that the streets of London were paved with gold were not altogether ill-founded. But there is no need for us to invoke the miraculous to enhance London values, they appear sufficiently wonderful under the dry light of statistics.

It is true that the increase in value cannot be traced in the same definite manner as that in which we have been able to note the spread of its acres, because the value of money has altered so greatly that even were it possible to ascertain the value of land from century to century we should have to adjust the money standard before we could compare the prices with those of our own day. It is necessary, therefore, for the purposes of intelligible comparison to take some fairly recent and limited period, during which it may be possible to fix some approximate relation between the values of the

sovereign at the respective dates of comparison, say for the last 200 years. In 1700 we may take the purchasing power of the sovereign as being about 40s., and in 1800 about 30s. of our present money. Fortunately for our purpose we have access to documents and statistical records which enable us to make a comparison of this sort; and, selecting three representative districts, such as the City of London, the borough of St. Marylebone, and St. James's-square, Westminster, we obtain particulars which, after making all possible allowances, are sufficiently striking.

The rateable value of the City of London in 1771 was 457,701*l.*; in 1871 was 2,186,487*l.*; in 1907 5,373,276*l.*

The rateable value of St. Marylebone in 1734 was 10,014*l.*; in 1801, 358,065*l.*; in 1907, 1,903,773*l.*

The rateable value of St. James's-square, Westminster, was in 1756 5,538*l.*; in 1836, 14,958*l.*; in 1907, 27,523*l.*

The increase may be still more accurately gauged by taking some instances from the latter half of the last century. In Old Broad-street sixty-three years ago a property was let at 300*l.* per annum, to-day that same property is worth 3,000*l.* a year.

In 1858 a house in Tokenhouse-yard was producing a rent of 300*l.* per annum; in 1893 the house was pulled down and the land alone was let at a ground rent of 1,250*l.* per annum. Between 1860 and 1900 the price of freehold land near the Bank of England rose from 15*l.* per square foot to 70*l.* per square foot, and at this remarkable price several transactions took place. These instances are, of course, drawn from the very centre of London, but to a smaller extent the same sort of thing took place wherever fashion or commerce elected to dwell. This increment of value is a phenomenon familiar to most of us; there are few who cannot speak of some property which has doubled in value within his own experience; nor is it necessary to go further back than the beginning of many an existing lease to find that the present value of the land alone is worth as many pounds as it was shillings when the lease was granted. From horse shoes to sovereigns have values progressed between the reigns of the First and the Seventh Edwards, and it is indeed a far cry from the no man's land of Lyndyn to the Administrative County of London with its annual value of 55,000,000*l.*

Conditions of Development in Towns.

From our contemplation of the gigantic size and enormous monetary value of London, it is impossible to avoid the question, How has all this come about? Why this wonderful increase of Lyndyn beyond other towns, some of which at first outstripped it? Among the causes which foster the growth of cities it is generally admitted that in the first instance a site would be chosen which would admit of defence; next would come the possibility of raising crops or otherwise obtaining food and water. An important factor would be accessibility, so that the inhabitants might get to and fro with comfort, and that commerce might be exchanged with neighbouring peoples. Hence most large towns are situated on the banks of rivers or the sea shore. There would be many other conditions of prosperity, such as healthy climate and situation, proximity of mineral wealth, the possession of good harbours or other commercial facilities, convenience of position, advantageous political and economic conditions; these are some of the things that make for prosperity and progress, and London has had her fair share of them.

The forces which tend to concentrate population in towns are too complex for enumeration, but they have acted mightily in London in gathering together the greatest assemblage of human beings which the world has ever seen. With that concentration has come the demand for dwelling accommodation, and the consequent transformation of agricultural land into building land, with a corresponding increase in value. Prosperity in trade sent up the value of land, in central positions, to a price undreamed of even fifty years ago, and the net result of this complex action is the colossal figure at which the value of London now stands.

Present Depression in Values.

But our experience teaches us that the upward climb of values is not continuous; there are depressions as well as elevations. The supply sometimes outstrips the demand and values fall, only to rise again with the renewed demand. The one indispensable condition of progress is a continually increasing demand.

Now, all who have had to do with property during the last eight years know that we are in one of those depressions now; in many cases the saleable value of property is less by 20 or even 30 per cent. than it was in 1900. Large numbers of premises are vacant in every locality, and there are suburban roads where house agents' boards are almost as plentiful as chimney pots.

In 1901 there were 16,000 houses empty in the County of London; in 1907 the number had increased to 41,600, and, according to a leading daily paper, in the spring of 1908 it exceeded 50,000. Nor is this condition of things in any way local; even in the City the greatest difficulty is experienced by those who desire to sell or let their property. Various causes are suggested to account for this depression—the financial disturbance caused by the Boer War, political uncertainty, economic difficulties, over-production stimulated by the boom of the nineties. Probably all these are contributory causes; but the broad fact is that values are down, and the question which all interested in property must put to themselves is this, Are we to regard this recent diminution in values as one of the normally recurring depressions, to be followed by an equally normal elevation? Is it merely a stage in the periodic rise and fall of values, or has it an element of permanence? By this I do not mean to imply that London has reached the apex of its value, but I do suggest the necessity for the most earnest consideration as to whether present conditions are not likely rather to restrain than expand the value of property. In the political outlook we seem to descry signs of movements which tend to unsettle rather than to produce that confidence in the security of property which is the very foundation of all investment. In the economic world we are told that England, prosperous as she is, is not so increasingly prosperous as other nations; and whether Free Trade or Tariff Reform, or any other system be the best for our country, it is evident that any check to our supremacy in trade cannot fail to have a downward bearing on property values. Then coming a little nearer to what takes place within our own purview, let us see if we can in any way account for the great number of unoccupied houses. From time immemorial, I suppose, there has been a constant change going on in the nature of the residences of the people, a natural development of the dwelling-house according to the progress of the ideas of comfort, a development beginning with the Cave of the Troglodyte and ending with the Ritz Hotel; so, in our time, the residential flat has been evolved; under the pressure of rates and taxes, of repairs and upkeep, and other kindred troubles, householders have decided in large numbers to limit their anxieties in these respects by living in buildings where an inclusive rent is charged, and which possess the advantage of compactness, security, and the service of liveried attendants. The growth of huge palace hotels, where the residents can obtain the maximum of luxurious comfort with the minimum of trouble, has diminished the number of those who keep up a town as well as a country house, and has well-nigh extinguished the business of furnished house letting. Again, the revolt against basement houses, accentuated no doubt by the domestic servant trouble, has emptied hundreds of houses by the simple process of the occupiers moving into the modern non-basement houses which have been built further afield. Cheap travelling also has enabled many a dweller in the crowded slums to move away to a new and convenient cottage, large numbers of which have sprung up on every hand in the outer suburbs. The trend of sanitary science and medical advice is all in the same direction—away from the centre, out into the fresh air. Nor is it only these processes of development which make for the depopulation of the central area, but it would seem as if the outward movement were being hastened by the very forces which at one time acted towards the centre. In the middle of last century the railway expansion brought people to reside in London and its suburbs by the thousand; now railways, tubes, trams, and motor-cars, are scattering them again. Districts miles out of London are becoming populous residential centres, and suburbs nearer home are being depleted. The thousands of empty houses to which I referred are not by any means all newly built, but large numbers have been left by occupants who have moved into new quarters further out. Many find it more easy to reach their homes ten to fifteen miles from London Bridge than it was to reach their former houses which may have been less than half as distant. The telephone, again, enables the business man to transact his affairs from afar; from his private house the resident may be brought into close touch with every part of the City, and so disappears one of the principal drawbacks to a country house. The merchant can speak at any moment and at any length with his factory people, with the result that he can get goods dispatched from his factory straight to their destination, consequently he does not require large warehouse premises in the City. There is little doubt that the conditions of life are changing, and it is for us to interpret the meaning of the change and its bearing upon the value of property. . . .

In the time of Queen Elizabeth it was thought that London was getting too big, and means were discussed for restricting its size. It is now fifty times as large and is growing larger every year. What is to be its future? Have we reached the limit of size which can be adequately controlled under one direction, or is London becoming unwieldy? These are questions which must be faced by our statesmen and municipal governors; but the sister problem as to the future of London values is one of the greatest moment to surveyors. No doubt the continued expansion of her borders will still tend to augment the aggregate value, but will the individual values continue to increase as in the past hundred years, or have they reached their limit? Are the economic and commercial causes which made values rise still in operation, or have they spent their force? Is the tendency of modern legislation in favour of or hostile to the maintenance or increase of values? Is the present depression merely the trough of a regularly recurring wave of prosperity, or does it mark the ebbing of the tide? These are momentous questions which "give us pause," but they must be faced by every surveyor, and just in proportion as he faces them boldly and intelligently will be the correctness of his judgment and the value of his advice to his clients."

NEW CHURCH, SOUTH SHIELDS.—A new church is to built to serve the needs of the parish of St. Oswin. The proposed church, which will provide accommodation for 600 persons, will be built of red bricks, with stone freely introduced as dressings. There will be ample vestry accommodation, and in order to avoid any obstruction in the view of the chancel the whole of the seating will be provided in the nave. It is intended to construct the building in sections as the funds in hand permit. The architect is Mr. Henry Grieves, South Shields.

THE SOCIETY OF ARCHITECTS:

SPECIFICATION OF TIMBER.

THE fifth sessional meeting of the Society of Architects was held on Thursday last week at Staple Inn-buildings (South), Holborn, W.C., Mr. G. E. Bond, President, in the chair, when a paper on "Specification and Inspection of Timber" was read by Mr. J. Davies.

The President, in introducing the lecturer, said that architects sometimes specified timbers which were difficult to get, whereas if they knew more about timber they might specify that which was more easy to obtain and was probably a better material. After hearing the paper, he hoped they would be able to write their specifications so that timber-merchants as well as builders would know what they were asking for.

Mr. Davies said the question was: What forms of timber could the architect specify for use in a given building which would, on the one hand, give his client the best value for his money and would, on the other, permit the contractor and timber-merchant to supply what was wanted without undue inconvenience? Many of the ports which once sent us large quantities of the fir, pine, or deal so largely used in building construction, both for joiners' and carpenters' work, had ceased to exist as sources of supply, and conversely other ports till recently unknown were now exporting to England some of the best and most suitable shipments. He submitted that the timber-merchant and contractor were within their rights in asking that the description of timber in architects' specifications should be clear and definite, and as far as possible in accordance with the reasonable convenience of the trade. Nothing pleased the sensible contractor better than to know that the terms used in the timber clauses in describing the wood were meant and would be strictly enforced. Estimators frequently complain that the formulæ usually put before them told them little or nothing, and that if they read them literally they would never secure a contract under open competition. They had to consider the class of erection in question and the idiosyncrasies and prejudices of the architect, so far as they were known to exist, plus the possibility of trouble from clerks of works. The clauses in question frequently opened the door to the substitution of inferior materials. Many builders exhibited an intense anxiety to carry out their wood work in a manner creditable to themselves and just to the architect for whom they worked; but even then they were sometimes involved in serious difficulties through varying interpretations of timber specifications, and grave injustice had been inflicted upon them by the inability of architects to realise the difficulties of the situation. On the other hand, there were a few who preferred the existing state of things, and saw in it opportunities for using indifferent wood, under the excuse that what was specified was unobtainable and that "this is just as good." The possibilities of trouble were always there, and the wide differences between sundry clauses taken from recently-issued bills of quantities would show that all could not be right and some must be wrong.

The author then quoted some clauses, the first being as follows:—"The joiners' work to be executed with the best yellow Christiania or best red Petersburg deal."

The second was:—"The joiners' work to be the best Christiania or equal quality deals." These clauses were issued by eminent architects in active practice, but they were calculated to produce a most unfortunate impression as to the knowledge and experience of the firms responsible for them. Christiania had not sent out, directly or indirectly, a good piece of joiner's timber for the last twenty years. He would not know where to find a Christiania deal or plank, and the smaller wood received from that place in the form of planed boards, floorings, and matchings was of the class used in the most ordinary kind of speculating building. The use of Petersburg stuff was more reasonable, but it was open to the objection that it ruled out by implication other ports which send better and milder wood than any we now get from that place. Petersburg wood had shared the deterioration which had characterised the whole of our imports, and even the finest parcels showed a considerable proportion of centres, knots, and sap. Another firm specified, "Joinery to be first quality red Onega, Gefle, or American growth." This gave Onega the preference over other Archangel ports which now sent equally good wood, and ruled out Petersburg, as well as various Swedish imports. As to phrases governing the carcassing or carpentry, one clause said:—"The timber for carpenters' work to be the best Memel, Danzig, or Riga fir, and no American, Swedish, or Scotch fir is to be used in any part of the building." Memel had ceased to send us fir; Riga sent it, but it was of a spongy texture and poor quality; Danzig still sent us fir in diminished quantities, of smaller sizes and lower quality than in the past. American red pine, which, when obtainable, was considered equal to any European stuff, was barred; and Swedish fir was excluded, which ruled out firm, tough, and elastic wood which came in abundance from the best Swedish ports and which was largely used for high-class timbering.

Altogether the terms were very confusing and made tendering under these clauses very much of a lottery until the personal intentions of the architect were ascertained. Summarising the carcassing clauses, none of them specify the wood mostly used for constructional work where dimensions that were over 12 in. by 4 in. were required, *i.e.*, pitch-pine, or, in some cases, Oregon or British Columbian pine. Most of our schools and municipal buildings were timbered in pitch-pine or Oregon pine, so far as the bigger sizes went, and in Russian or Swedish deals and battens where the smaller dimensions were concerned; yet these items were not specified. Here we had a complete divorce between precept and practice, fraught with possibilities of endless disputes between the profession and the contractors. The right of veto being with the former, the necessity of revision might not appeal to them with such force as to the builders, but the feeling on the part of the latter was very strong.

But the task of compiling clauses which would govern the use of timber with fairness to all parties was not an easy one; but he proposed to put forward formulæ which appeared to him to meet the case. If they could agree upon their terms, he hoped that members would adopt them, thereby taking an active part in effecting a much-needed reform.

Before doing so, the author dealt with some features of the building trade, with special reference to the soft woods, which formed by far the largest proportion of imports. Although we spoke of Memel or Danzig fir, the tree which yielded it was a pine. Whether we received it in the form of squared-hewn logs from Danzig, or planks, deals, and boards from Russia, Sweden, and Norway, the wood was essentially the same, variations in its texture and quality being brought about by differences of climate and soil. That was why it was difficult to draw distinctions between the shipments from various ports, any one shipment containing both fine, slowly-grown, and clean wood from the highlands, and coarse, wide-ranged, and spongy stuff from the lower and moister ground. It was variously called redwood, red deal, yellow deal, Baltic, Memel, or Danzig fir, and Northern pine and Scot's fir. It was the wood about which nearly all the disputes occurred, and was the one which was usually specified for most forms of building construction. The situation was complicated by the fact that although Riga fir was no longer of desirable quality, and Memel fir was a thing of the past, we still got hewn-squared logs from Danzig, and if an architect absolutely insisted upon it, they could be had, although only in limited quantities and of very ordinary quality. Consequently, the builder who met the clause in a specification was faced by the probability that the architect was only using a figure of speech, but also the possibility that he had some reason for using the words and actually wanted Memel or Danzig fir. Undoubtedly the old-fashioned Memel, and some of the Danzig, was very fine, mature wood of slow growth, very sound and clean, and of great durability. But the best trees in the easily accessible forests were cut down faster than they grew, and what we got now was not quite so good. There was no object in specifying this wood in preference to Swedish or Russian, so far as the latter was obtainable in the required sizes. The question arose, "Where large sizes were required for main structural work, what was the best alternative, seeing that we did not receive imported planks larger than 12 in. by 4 in. from Russia or Sweden?" The answer was: Pitch-pine, and some would include the Douglas fir or Oregon and British Columbian pine.

The important ports of shipment in Russia were Petersburg and Archangel. We receive both joiners' and carcassing stuff from each, Petersburg being usually sorted into part 2nd and 3rd, and Archangel into part, 2nd, 3rd, 4th, and a few 5ths. The shipments could usually be distinguished by their being marked with a hammer stamp on the ends, without any paint, the Swedish being usually marked with stencilled letters in paint. The Petersburg yellow or red had deteriorated somewhat; it still sent us some very good wood, and the quality was quite high enough to warrant its inclusion in specifications as ports of origin for joiners' stuff. But the merchant or builder had to allow for the presence of a number of deals which could not be utilised for the finest work, even in the best quality. The wood from Archangel was the best of all for the most exacting kinds of indoor work. Its heartwood was less red than that of Petersburg stuff, and it was very mild and easy to work, being less likely to warp than similar wood from any other port. It was understood that he was speaking comparatively, seeing that the best got from any shipper was very far from perfection.

There was a large timber industry in Finland, and many ports send carcassing stuff, mostly of the cheaper order. There were two very useful brands shipped from Bjorneborg, "BS 1st SC and RF 1st SO." The cheaper qualities from these shipments were very useful for ordinary timbering work, and there was another Finnish port which was worthy of some attention, as sending large quantities of very sound and usable carpenters' stuff, marked "Kemi," in red paint, the port of shipment also bearing this name. The wood was a little too strong for joinery, but was none the worse on that account for use where a load was carried. It had been tacitly accepted by many architects as a fair and reasonable standard for medium to good class work.

Sweden had a large number of shipping districts, the better known of which were Gefle, Soderhamn, Hudekswall, Sundswall, Skelleftea, and Lulea. The various makers sort their output into 1sts, 2nds, and 3rds, on the one hand, and 1sts, 2nds, 3rds, 4ths, and 5ths, on the other. It was worth remembering that the 3rds of some shippers were no better than the 5ths of others, and that in Swedish stuff particularly the nominal quality had no great significance, while a superabundance of crown marks was not by any means a guarantee of excellence. The best wood was very clean, perhaps more free of knots than even the best Archangel shipments, but showed more sap, while even the highest grades contained their full share of centres. Still, properly converted, the first quality Swedish wood made finished joinery

second to none, costing a little more in labour perhaps than Archangel. It was therefore quite fitly included in joinery specifications, and the 3rds and 4ths made tough timbering sizes, the former being about similar to Kemi. He thought the harder nature of the wood made it superior to the Archangel for stress-bearing purposes. Norway did not count as a place of origin for good fir. The wood was small and coarse, and was never sold by merchants to builders for contract work. It mainly consisted of planed boards, floorings, and matchings, for ordinary speculative building, and so forth.

Leaving the yellow deal, there were one or two other woods which claimed passing notice. There was the white deal of commerce. We received it from Russia, Sweden, and Norway, in the form of planks, deals, and boards. It was not so durable as yellow deal, and was not used for constructional work in the South, although it was largely used, with its American cousin, Canadian and Newfoundland spruce, which it resembled, for cheap work in the North and Midlands. It did not shake so readily as yellow deal, and some of the Archangel and Petersburg shipments were very free from large knots. It was therefore used for internal fittings, etc., but had not as yet entered into the calculations of the architect. The increasing difficulty of obtaining thoroughly clean and sound yellow deal, however, might yet bring it more largely into use in situations where it was not exposed to damp or the weather. The sap of this wood was very difficult to distinguish from the heart.

Canadian red pine was very similar to our European yellow deal, and was regularly imported before Russian and Swedish wood drove it out of the market to a large extent. It was sometimes used as a substitute for yellow deal, and might be accepted as such without hesitation, being quite equal to it in durability. The best parcels were quite as expensive as the higher-class European imports, and were preferred by some in the belief that they did not shake in seasoning to so large an extent as the latter. When worked up, an expert would find it difficult to distinguish from yellow deal, although the difference was fairly obvious in the imported plank.

Pitch-pine from the eastern seaboard of the southern states of North America was imported in boards, deals, planks, and logs. It was sold in boards up to 12 and 14 in. wide, practically free from knots and sap, thereby permitting the builder to turn out work creditable to himself and satisfactory to his client, which was not easy of accomplishment when the material was yellow deal. As a substitute for the Memel or Danzig fir it was now almost universally accepted.

Oregon or British Columbian pine was, strictly speaking, a fir, being known to many as Douglas fir. The wood bore a close resemblance to pitch-pine, both in the balk and when worked up. It had one or two advantages over pitch-pine, inasmuch as it was imported regularly in very useful sizes, sawn into square-edged planks, 4, 5, 6, 7, and 8 in. thick, 12 to 18, and sometimes 20 to 24 in. wide, in lengths of from 12 to 40 ft. These were piled under sheds in the docks, instead of being floated in the ponds, which was the usual method of storing pitch-pine. The few parcels of pitch-pine planks which were imported in similar dimensions did not seem to remain so sound as the Oregon pine when kept out of the water, so that the contractor, in converting roof and other timbers, had to remove the outsides from pitch-pine logs at considerable loss to himself. On the other hand, the dry Oregon pine planks minimised the waste, and the enormous dimensions of the tree permitted shippers to send them practically free from sap. Against these advantages was to be set the conviction of some that Oregon pine was less durable than pitch-pine. Without being dogmatic on this point, it must be admitted that the spring wood in some of the faster-grown trees was somewhat soft, and scantlings converted from them would not stand alternations of wet and dry conditions so well as pitch-pine. If the slower-grown wood was selected, however, and it was used for internal work, many architects made no objection to its use. It was fair to set off its greater freedom from sap and shakes against the possibly superior toughness of pitch-pine. It was used by a sufficiently large number of architects to warrant its inclusion in the list of merchantable alternatives to Baltic fir, and subject to the conditions named was regarded as a reasonable substitute for pitch-pine. The ordinary or merchantable quality was used for constructional work, and there was a higher grade, known as select, which was worked up into joinery.

A considerable amount of Quebec yellow pine and Kauri pine was used for joinery, and gave admirable results. It might be worth while to note that yellow pine was largely known in America as white pine, and in England was sometimes called Weymouth pine. It was the mildest and easiest to work of all the pine family, being used by engineers for pattern-making. Kauri pine was a New Zealand wood which yielded magnificent planks, and was one of the very few woods which were obtainable in large dimensions quite free from pith, knots, and sap. It made very handsome joinery, and its use was always a source of satisfaction to the contractor. It was one of the very few woods which shrink endways, or in the direction of the grain, in seasoning, but the fault could be overcome by reasonable care in conversion. This wood was not to be confounded with Karri, which was a hard wood, used for paving blocks, piles, etc. The quality of nearly all timber imported into England had steadily deteriorated during the last twenty years, the leading exception, viz., Kauri pine, being unfortunately a joinery and not a carpenters' wood. No doubt there were thousands of mature and well-grown trees in the forests of Europe and America which would yield just as good timber as that which we used to receive. But the trouble was that they were, so far, inaccessible. The foreign shipper would not buy or cut down trees upon which he could not earn a profit. When the cost of carriage rose beyond a certain figure it became prohibitive, and the shipper fell back upon those forests which lie sufficiently near to the railways and rivers to permit of his getting the wood to the port of shipment at a certain price. These had already been worked, and the finest trees removed. Natural regeneration and state regulated replanting together failed to keep pace with the development of the world's demand. European countries which once dipped very little into the availabile Russian and Swedish supplies now competed with the United Kingdom as bidders for yellow and white deal. The standard of comfort in the poorer countries was rising, which meant that the demand for wood per head per annum was increasing. Our own colonies imported Baltic stuff for house building, finding it cheaper to do that than use their own woods, which were either too hard to work for the purpose or too valuable as exports, so that South Africa, Australia, and New Zealand were growing markets for the material we want.

Afforestation would not help us in our own generation. Although yellow deal now grew in the United Kingdom, it did not exist in really merchantable quantities or dimensions. The Royal Commission which had recently reported upon afforestation was of opinion that it could be grown here in bulk, and that scientifically planted forests would eventually produce good, clean, usable timber. But we should have to wait about ninety years before the trees would yield cut stuff sufficiently wide and long. Meanwhile, the destructive process was going on, and the cutting of young wood in Norway and Sweden for wood pulp was further retarding the work of replenishment. Therefore we must do the best we could with the resources at our command, and while anxious not to appear as an apologist for poor or shoddy work, he thought we must take these facts into account in the specification and inspection of timber. Importers appealed to agents and shippers in vain for deals and planks which should be free from sap, shakes, large, loose and dead knots, and other defects. Money would not buy them. Timber was not a manufactured article, which a sufficiently tempting price would bring forth in perfection. To sum up, the wood of to-day was admittedly imperfect, and the question arose, "What measure of imperfection, if any, is permissible in timber used for contract work?" The answer to that question would determine the wording of timber specifications. What should we say about sap? It was safe to say the area of a transverse section of a typical *Pinus Sylvestus* would show about two-thirds heart and one-third sap. That two-thirds heart was roughly circular in shape. Cut a parallelogram, from it. They had about half the area of the original section in that parallelogram, with a centre, or pith, in it. Could we afford to lose half the tree? Of course everything depended upon the class of work in hand, and for some exceptional contracts no doubt every particle of sap must be eliminated. But was that always necessary? If trees were felled in the winter, when the live sap was not filling the cells and properly seasoned, the sapwood was visible but bright and light-coloured. If trees were felled during spring and summer when the juices of the tree were circulating, the cells contained chemical combinations which were liable to decomposition or to the attacks of fungi. The sapwood of such trees became discoloured, turning green or blue, and was unfit for use. At best the sapwood was less durable than the heart. But if perfectly bright, and not exposed to variations of humidity in the atmosphere, it would last and take a share of the load. That was to say, it was generally assumed that a 9 in. by 3 in., showing 1 in. of bright sapwood at the edge, would be stronger than the 8 in. by 3 in. which would remain were the inch of sapwood removed. So far as internal joinery was concerned, in panels, mouldings, etc., where the element of strength was not important, the problem became largely one of appearance or interference with decorative effect. The general practice of to-day tolerated the use of a limited proportion of bright sap for all but the very highest class of work. But very few specifying clauses contained any hint of permission for the inclusion of the smallest modicum. Here we had a difference between theory and practice which had frequently caused serious friction. Before leaving the point, he would warn all concerned against deals containing a certain kind of pink, soft, mellow-looking wood, the curve of whose annular rings showed that it was cut from a large and mature tree, and which was usually quite free from any suspicion of sap. It was over-ripe and decaying stuff, far inferior in strength to the youngest sapwood in the healthy tree.

Then what about knots? The large, dead knot was a source of weakness, but the live knot, firmly attached to the rings of living wood, might be regarded as playing its part in bearing stress. The small, dead knot, if its dimensions did not break into many of the annular rings, was a negligible quantity so far as strength was concerned. Here again the question of disfigurement came in, and only the class of work and the prominence of the piece of timber could determine what knots might be passed as permissible. As to centres, a sound centre was rarely objected to if completely boxed in by the surrounding wood, and was, of course, inevitably passed in the case of very large carcassing stuff. Referring to shakes, their injurious effect depended upon their length, depth, width, and continuity. The inevitable shrinkage caused by seasoning must effect division here or there in the rings of any large scantling, and only personal examination

of the piece itself and a knowledge of the use for which it was intended could determine whether a shake was injurious.

Putting all these considerations together, he suggested the following as workable clauses for the regulation of joiners' and carpenters' timber. Seeing that there were so many classes of work, he should welcome any suggestion from the profession as to the provision of two or more alternative clauses, for use in accordance with the level of practical excellence required or the pecuniary resources of the individual or institution for whom the work was done.

Wood for carcassing or carpentry shall be sawn out of sound, bright, square-edged Baltic or White Sea planks, deals and battens, or Danzig fir, pitch, Oregon, or British Columbian pine of similar quality.

The wood for joinery to be Baltic or White Sea yellow, equal in quality to the best Russian or Swedish shipments.

All to be free from injurious open shakes, large, loose or dead knots, or more than a small proportion of perfectly bright sap, and thoroughly seasoned.

He had to acknowledge as a basis for the above some very fair and reasonable clauses used by a well-known firm, slightly altered as a basis for discussion.

In the discussion which followed, Messrs. C. H. Mead (who proposed a vote of thanks), — Sadgrove (who seconded), Ellis Marsland, Percy Tubbs, Colonel Leslie, — Tucker, J. W. Rowley, and the Chairman took part. The general opinion expressed was that the architect could not very well become a timber expert, and he must depend on his own judgment as to whether wood was good or not. It was a matter of experience, and it was unnecessary to specify marks or ports; the fact that a piece of timber came from a given port was no guarantee of its excellence.

The vote of thanks was agreed to, and the meeting terminated.

THE ARCHITECTURAL ASSOCIATION FIFTH SPRING VISIT:

ELECTRICITY GENERATING STATION, HORSEFERRY-ROAD, S.W.

THE erection of this station to replace the existing generating station of the Westminster Electric Supply Corporation, Limited, in Millbank-street, is a necessary consequence of the Westminster Improvements scheme now being carried out by the London County Council.

The new building occupies a corner site facing the Horseferry-road with a return front to the new road leading to Smith-square. A collection of old prints and ordnance maps, showing the former configuration of the district, was on view, and clearly showed the difficulties encountered in foundation work, owing to subsoil water and to an old watercourse crossing the north-west angle of the site. A continuous foundation in the form of a waterproof tank has accordingly been constructed, with a layer of asphalt interposed between two thicknesses of concrete over the whole site, and retaining walls constructed with a thin shell of brickwork abutting against the ground to receive the vertical asphalt and heavy concrete walls and counterfoils within. This tank rests on the ballast, but beneath all concentrated loads concrete piers are carried down to the blue clay, the rows of stancheons having a continuous deep concrete foundation so treated. The raft is also further strengthen below boilers and engine-beds by steel joists embedded therein.

A very straightforward and workable plan has been devised by the architect, Mr. C. Stanley Peach. The principal apartments are ranged one behind another parallel with the long front to Horseferry-road. The basement will be chiefly occupied by the bases for supporting machinery above, boiler flues, and condensing plant; but an important feature is a tunnel or subway extending round both fronts partly beneath the pavement, into which the various main cables will be brought from outside and conducted to vertical shafts communicating with the two switchboard galleries. These are on the main front at ground and first floor levels. Immediately behind the ground floor gallery is a large engine-room, over 180 ft. in length, for steam plant. Behind this again is the boiler-house, with space for seven boilers. Above the engine-room is a motor-generator room, which will receive current from another station at St. John's Wood, and by means of engines and dynamos generate a new current for distribution in this district. At the end of this room, next the new road, is a battery-room to contain accumulators which will be used in the regulation of the distributed current. Adjoining the battery-room on the first floor is a flat for the resident engineer in charge, and above, on the second floor, a similar residence for the assistant engineer. In the extreme rear of the building, above part of the boiler-house, are the coal bunkers. The remainder of the boiler-house being covered by a glazed roof at a lower level thus ventilates into a well in the centre of the building, in order to minimise as much as possible nuisance to surrounding property. A private roadway, accessible from both roads, passes entirely round the rear boundary of the site, and machinery can be unloaded and transported thence directly to any part of either of the engine-rooms by means of overhead "travellers." Coal will also be delivered here, and hoisted by a "coal conveyor" to the bunkers, whence it will be conducted by hoppers to the mechanical stoking appliances attached to the boilers. The chimney shaft will rise to a height of 215 ft. from a base 21 ft. 9 in. square outside. It is a plain stock brick shaft with a rather pronounced batter, and will be finished with terra-cotta dressings below the cap, which will be of cast-iron in sixteen sections. The chimney is lined with firebrick to a height of 125 ft., and is being built overhand with an ingenious system of scaffolding dispensing with putlogs.

The building is generally of steel frame construction, in 18 ft. bays, and, being exempt from the provisions of the London Building Act, the interior division walls are mere screens, and the exterior walls of less than schedule thickness. The visit was arranged at a most interesting stage of the construction, when the steel skeleton could be well seen and its details (all designed in Mr. Peach's office) appreciated. A particularly good expedient has been adopted in the boiler-house, where, in order to preserve an open passageway between the boilers, the stancheons are doubled, allowing a passage between them, and reunited above by a most appropriately detailed connexion. The effectiveness of this simple and structurally expressive steelwork, indeed, makes one regret that it has been necessary to mask the building with screen elevations of Portland stone, which are described as "Free Genoese Italian Renaissance" in style. Granted the necessity, however, which is said to be due to the essential importance of detracting as little as possible from the enhanced value of the surrounding land resulting from the improvement, one may still be permitted the feeling that less exuberance of style would have been more expressive of the purpose of the building.

HENNEBIQUE FERRO-CONCRETE STANDARD SPECIFICATION.

WE have received from Messrs. L. G. Mouchel & Partners a copy of the general specification prepared for the convenience of architects and engineers applying the Hennebique system of ferro-concrete in structural work.

Passing over the first three clauses, which relate to methods of contracting and tendering and to details connected with working drawings, we come to a well-arranged and judicious series of stipulations affecting the quality and proportions of the materials to be used in making concrete, the quality and treatment of steel for reinforcement, general instructions for the construction of moulds and centring, the conduct of concreting, provision for conduits and mechanical plant, the removal of moulds and centring, and the conduct of load tests after completion of the work.

The clauses throughout are written in such a way that they can be incorporated in the specification issued by any architect or engineer whose authority is duly recognised wherever necessary for the purpose of making clear to the contractor the fact that he is responsible to the architect or engineer, as the case may be, for the satisfactory performance of his work.

We are glad to notice that the authors insist upon very rigid tests for Portland cement, accepting the requirements of the British standard specification in most respects, but making some additional stipulations with the object of obviating any risk of unsoundness or of too rapid setting. The clauses as to the character, sizes, and cleanliness of sand and aggregates are distinctly good, and the proportions recommended for concrete should insure a mixture capable of developing great strength and of protecting the embedded steel from corrosion under all circumstances. The strict testing of steel insisted upon in this specification is a feature deserving commendation, as users are too much in the habit of accepting anything sent by the makers. That may be all very well in ordinary construction, but for reinforced concrete work the chemical composition and physical properties of the metal are very important details.

It may perhaps appear to some readers that the section dealing with the removal of moulds and centring is a little too brief, and might with advantage give more detailed instructions for guidance. On the other hand, it is rather a dangerous thing to lay down rules for general guidance in the operations to which reference is here made, as conditions vary considerably according to the nature of the work and the season of the year. Consequently the architect or engineer is best protected by making clear the point conveyed in this specification that the contractor shall accept full responsibility for any injury or damage caused by or arising from the removal of moulds and centring.

Taken as a whole, the standard specification issued by Messrs. Mouchel & Partners is one which ought to insure sound and reliable work, and although emanating from a firm whose interests appear to be more or less associated with those of the contractor, it is drawn in such a way as to provide every reasonable safeguard for the architect or engineer and his clients.

MAINS AND MAIN-LAYING IN CENTRAL LONDON.

ON Saturday afternoon, February 27, Mr. W. J. Liberty, of the City Engineer's Office, the President of the London and Southern District Junior Gas Association, gave an address to the Holloway Polytechnic Architectural and Building Association on this subject, accompanied by an inspection of the underground streets of the City of London, to demonstrate better the points elaborated and to show the utility of these underground constructions.

On receiving the party under the Holborn Viaduct, where they passed into the subways through two massive iron gates, Mr. Liberty said he had much pleasure in welcoming them, in the name of the Corporation of London, that afternoon, with a view to explaining somewhat of the methods of mains and main-laying in Central London and illustrating it in a practical manner by a walk through the underground streets of the City. The streets he had to show them were 11 ft. 6 in. in height and 7 ft. in width, where they were under the footpath, whilst those running through the

centre of the roadway were 7 ft. 6 in. high and 12 ft. wide at the bottom, being semi-circular in shape, white Burham bricks being used. The construction of these underground streets was commenced in 1866, under an Act of Parliament the City obtained in 1864.

After pointing out the various appliances and the valves, siphons, etc., in the great trunk mains, and enlarging on the utility of the subways, Mr. Liberty concluded his address by trusting that they, as members of the architectural and building profession, would see that the buildings they put up from time to time were equipped with iron gas-barrel whilst they were in carcass, so that when the occupiers came into residence they would find the gas-cooker, etc., ready. It would save "compo" fittings being put in afterwards, which were a disfigurement and a danger, and it was a foregone conclusion that gas would be wanted, if for cooking and heating alone.

ALMSHOUSES AT MILTON, DORSET.

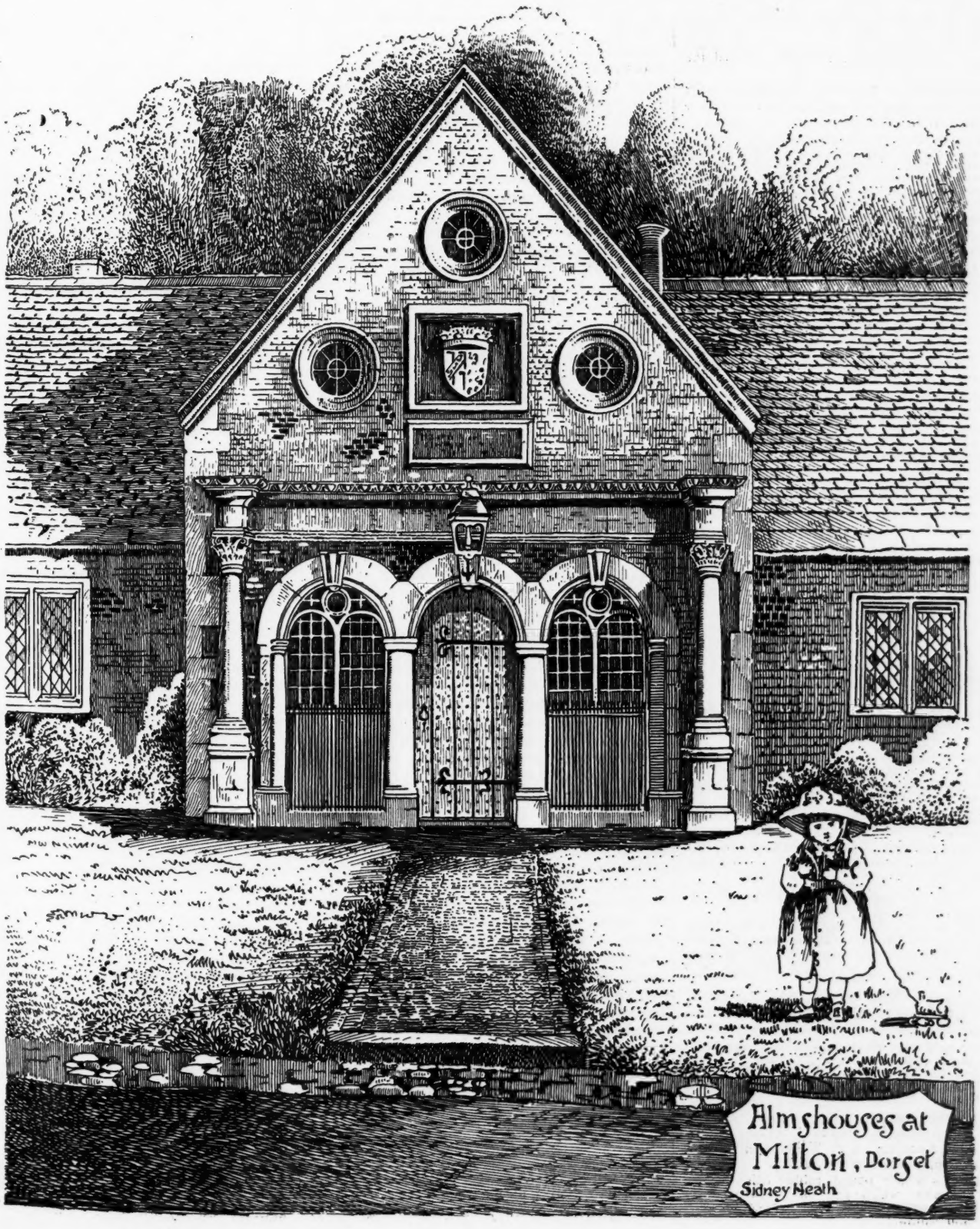
THE old town of Milton (strictly Middletown, as it was the middle town of the county), seven miles south-west of Blandford, was one of the most ancient in Dorset. It grew up with and around the abbey, and contained among other dwellings, four inns, a grammar school, and an almshouse, which last was founded in 1674 by Sir John Tregonwell for the support of six poor widows. This cluster of buildings lay on the south side of the abbey church, and the whole town was pulled down about 1780, by Lord Milton, as it was in too close a proximity to the new mansion he was erecting from designs by Sir William Chambers, and in which is incorporated the XVth century monastic infirmary. Having swept away the old town, Lord Milton built a new one with the materials of the demolished buildings, which constitutes the present village of Milton. It consists of two rows of cottages; in the centre of one row is the almshouses (the endowment of which was preserved intact), in the centre of the other row, the church.

The almshouses call for no special remarks, save that although the closing years of the XVIIIth century were not particularly prolific in producing good architectural compositions, one is glad to have this interesting Dorset example. SIDNEY HEATH.

THE ARCHITECTS' TECHNICAL BUREAU.

A MEETING of the Selection Committee was held at the offices of the Bureau on Thursday, March 4, when the following gentlemen were present, Mr. Walter Cave in the Chair:—Messrs. Louis Ambler, Wm. Flockhart, George Hubbard, Geoffry Lucas, and Wm. A. Pite.

The following manufacturers' specialities, etc., were submitted and approved, and the circulars are now being dispatched to the architect subscribers for filling in the



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respective classified folios they have for this purpose :—

PATENT METAL ASPHALTE DAMP-COURSE, "LION BRAND" (Messrs. F. McNeill & Co., Bunhill-row, E.C.).

This consists of a layer of sheet lead between two layers of fibrous asphalt, of which every fibre is thoroughly saturated with asphaltic compound and each layer firmly adhered to the sheet lead by a coating of the asphaltic compound. The material is stated to be impervious to moisture, flexible, does not crack, and can be applied quickly and is not easily damaged.

THE "RATCHET" PATENT FANLIGHT OPENER (Mr. Robert Adams, 3 and 5, Emerald-street, Theobald's-road, W.C.).

This is an adjustment suitable for fanlights hinged at the top and bottom, opening inwards or outwards, or centre pivoted. The stay is of tempered steel and provided with saw-like teeth, by means of which any degree of opening of the fanlight may be obtained. This cannot open accidentally, and folds out of sight when the light is closed.

THE "LINK MOTION" PATENT FANLIGHT OPENER.

This is a fitting applicable for fanlights, hung top or bottom, opening inwards or outwards; it is neat in appearance and needs no cutting of woodwork, and the fanlight can be regulated to any degree.

THE "CALEDONIA" PATENT FANLIGHT OPENER.

This is suitable for sashes hung at the bottom, opening inwards or otherwise, and possesses the advantage of operating the sash from the middle. The fitting has a stiff back chain, one end of which is fixed to the sash and the other to a nut, which traverses its leading screw, to which is fixed the endless cord, wheel, etc.

THE CAVE PATENT EXHAUST VENTILATOR AND CHIMNEY COWL (Dr. Cave, 15, Charles-street, Haymarket, W.).

This is a patent ventilator, in which the force of the air currents are utilised to produce a suction in the outlet pipe, whilst down-draught is at the same time prevented. The fitting is devoid of mechanically actuated parts, and it is claimed to be a practical and inexpensive ventilator, and may be used on chimneys to prevent down-draught.

THE LONDON WARMING AND VENTILATING COMPANY'S GRATE (The London Warming and Ventilating Company, 20, Newman-street, W.).

The chief feature of this is that it has a secondary flue, used in conjunction with the usual firebrick back, controlled by means of an adjustable canopy, which gives the necessary draught for the combustion of anthracite coal. The grate can be set in exactly the same manner as an ordinary grate, and the design may be varied to suit all requirements.

WESTMORLAND GREY-GREEN SLATES (Messrs. Mandall's Slate Company, Ltd., Coniston, Lancashire).

These are very durable, and are sold by the ton in random lengths and widths, the roof thus covered as to the lengths having a very pleasant effect. The quarries can now give immediate delivery of large quantities.

SHERARDIZING (The London Sherardizing Company, Ltd., Registered Offices, 6, Great Winchester-street, E.C.).

This is a new treatment of iron and steel by the process of "sherardizing" or dry galvanising. Bolts, nuts, screws, window and door fittings, pipes, castings, iron casements, ornamental ironwork, etc., are efficiently protected from rusting and corrosion by this means. The coating is uniform, may be readily polished to a brilliant surface like nickel plating, which stands exposure to the rain, and the process does not deteriorate the quality of the metal. Paint adheres firmly to the coating, and has no tendency to peel off.

"TOM JONES" PATENT GEARING (Messrs. Tom Jones, Lock, & Co., 4, Warwick-court, Holborn, W.C.).

This gearing has a screw, which travels in the regulator box, and is invisible, besides improving the appearance. The screw, being concealed, cannot harbour dust, dirt, etc.

THE "TOM JONES" NEW PATENT PANIC BOLTS (same makers).

These dispense with all cogs, wheels, etc., the thrusts being direct and easy, and they have been used in a large number of public buildings, etc.

THE "TOM JONES" NEW PATENT HOTEL LOCK (same makers).

This lock is to prevent robbery, it not being possible for anyone to take an impression of the key, and thereby obtain control over all the locks in the establishment, as is usually the case with suites of locks under master key.

"NEWELLITE" OPAL TILES (The Newellite Glass Tile Company, Ltd., Shenton-street, Old Kent-road, S.E.).

These are opal tiles with a patent backing or key. Supplied in all colours, not easily broken, and may be obtained for inside and outside work. They have an impervious surface, and are not liable to discoloration.

"PATENT INDIA-RUBBER TILING" AND "PATENT MOSAIC INDIA-RUBBER TILING" (The India-rubber, Gutta-percha, and Telegraph Works Company, 106, Cannon-street, E.C.).

This latter is a new patent rubber tiling in the form of mosaics, which can be prepared in a variety of colours. The tiling is very durable, noiseless, and sanitary.

ROBINSON'S PATENT RENEWABLE CONCRETE TREADS (The Metallic Paving and Artificial Stone Company, Ltd., Ranelagh-gardens, Fulham, S.W.).

These are made of the same material as the steps, and cast in sections 6 in. wide. In case of wear or damage any section can be unscrewed and replaced by a new one, and all cutting out, noise, dirt, and stoppage of traffic is avoided. The treads are thoroughly matured in stock before they are put into use, and give excellent foothold.

PONTIFEX'S PATENT NOSOUND WATER-WASTE PREVENTER (Messrs. Pontifex & Sons, Farringdon Works, Shoe-lane, E.C.).

This is noiseless in filling and discharging, and has a powerful flush. It is simple of construction and flushes on pulling the handle. The gurgling noise so prevalent in siphon cisterns of the ordinary type does not occur in this cistern.

THE "WORKER" GRATE RANGE (Messrs. F. Edwards & Son, 8, Great Marlborough-street, W.).

This range has been designed to meet the requirements of flat and tenement occupiers, who have long desired having a range for cooking purposes in a room which serves the double purpose of kitchen and living room. It can be obtained with a high-pressure boiler of sufficient power to efficiently heat with a short circulation a 20-gallon hot-water tank. The size of the grate front is 1 ft. 9 in. wide by 3 ft. 2 in. high, and will boil two saucepans of three and four quarts capacity at a time. It has also an oven 17 in. by 12 in. by 7 in., which will cook a joint and a pie together. When required as an open firegrate it is only necessary to push back the hot plates and pull out the canopy.

"ELEPHANT BRAND" PORTLAND CEMENT (Messrs. I. C. Johnson & Co., Ltd., 4, Eastcheap, E.C.).

This is special cement of fine quality, manufactured by the above. Results of tensile and other tests can be obtained from the makers. This cement is specially recommended for use in constructional work in ferro-concrete.

The Birmingham Guild of Handicraft, Ltd., 7, Newman-street, W., submitted a selection of electric-light fittings of good design.

THE CARPENTERS' COMPANY LECTURES:

IDEALS IN BUILDING—FALSE AND TRUE.

THE ninth of the course of lectures arranged by the Carpenters' Company on Arts Connected with Building was delivered in Carpenters' Hall, London-wall, E.C., on Wednesday last week by Mr. M. H. Baillie Scott, whose subject was "Ideals in Building — False and True." Mr. W. Robertson, Past-Master, presided.

Mr. Baillie Scott, who showed some very good lantern views in illustration of his remarks, including views taken from photographs lent by Mr. B. T. Batsford, said that in these days building had become a science rather than an art, and it was of the art of building rather than of the science of building he wished to speak. It would be enough for him to define art as an occupation in which man sought to satisfy not only the need of his body, but the desire of his heart.

He would not speak of architecture, because all architecture worthy the name was merely building which had flowered into beauty, and before they could hope to gain that flower they must grow the tree. We must have an art of building first, and our builders and craftsmen must be artists, as they used to be. In order that they might become so it would first of all be necessary to set them free from the malignant influence of certain ideals in building which were now universally followed.

The first of these to be considered might be called the mechanical ideal. From the point of view of the modern architect, the modern builder and his men, in the treatment of their materials, one aim alone was followed. It was to make all surfaces smooth and all lines mathematically straight. The high-class joinery of our modern factories was turned out with inhuman precision to the architect's pattern—the lines of the mouldings vanish into the picture with cast-iron rigidity. Every surface was as smooth as hands could make it, every edge as straight, and every one was apparently pleased with the result. It was universally admitted to be high-class work, and as such could not be done with greater accuracy or greater regularity. And if building was to be considered as a science, we might agree with this general verdict of approval, but art had different aims, and cared nothing for mechanical regularity. Art took up the materials sympathetically, affectionately, and discerned some character to be developed by proper handling. Instead of the callous, brutal methods of the modern factory, art made the workshop into a school where materials might be "educated" in the literal sense. And the chief aim of this education was not to force the material into the straight waistcoat of preconceived forms, but so to deal with it that, having first sympathetically divined its character, that character might be expressed properly subordinated to the fulfilment of practical functions; giving play to individuality in the material only so far as it did not militate against the general weal, giving a finished education to those materials which possessed the necessary qualities for development, and letting poorer materials depend on suggestion of their natural graces: As an example of what he meant, and taking oak as the material to be dealt with for the floor and for such of the woodwork of a building as doors and panelling, it would be obvious that a certain degree of smoothness and straightness was necessary and desirable. The degree of finish which could be naturally obtained by the use of the old hand tools—the chisel and the gouge, the draw-knife and the adze—would still express much of the character of the oak, its toughness and woodenness, and would still not leave the work too rough for its position and function. Something of the very nature of the material would find expression. It would be full of character and charm, all of which would be lost if the timber were made smooth and straight in the modern way.

In the beams of a ceiling or the timbers of an open roof it would be at once apparent that these could adequately fulfil their functions in the structure with less sacrifice of individuality. It might be remembered that the timber they were using was originally a tree, and they might therefore suggest something of its previous existence, so that the impression it conveyed to the mind carried with it something of the woodland: Choosing for use as a beam a tree of the necessary size, this might be roughly squared with the adze, leaving here and there at the angles a hint of its original rounded section, and letting the required camber of the beam be formed with the natural lines of the grain. As long as individual characteristics were thus kept properly subservient to practical uses the building would gain immensely in interest and beauty; and the various gradations of finish nicely adapted to uses would give a variety and charm to the work which we at present only associated with the buildings of the past. Such slight modifications, each in itself perhaps hardly perceptible, would have a cumulative effect and produce in the end that slight difference which made all the difference. In all the various materials used in building scope would be found for the expression of the character of each. In the treatment of wrought-iron work the best forms would be found to be those which suggest that this cold and hard substance was once in the heat of the furnace, soft and ductile. And so with other metals; we might find a way to express the brassiness of brass and the leadiness of lead. In considering all the varied artistic achievements of the past we should find again and again that a certain degree of mechanical imperfection was the inevitable concomitant of beauty, and the more vital the work the more noticeable did this become. Let them take as an example an old house, say, of the Tudor period. If they tried to analyse the charm of its exterior they would find how largely this depended on the character of its outlines and surfaces. The ridge line of the roof against the sky was not straight, the courses

of the tiles were uneven, the walls were not absolutely vertical, and the courses of the brickwork not absolutely horizontal, and the bricks and tiles were not even in colour or exactly regular in shape. Entering the house they would find everywhere the same slight deviations from regularity; and as with outline so with surfaces—each had its proper characteristic texture. Everywhere mechanical perfection gave way to expression of character in many subtle ways. They must not imagine that this was due to want of skill, for to get the true character of such a building was not an easy matter. They must not suppose either that he wished to advocate mere crookedness and the tumbledown picturesque; he merely wished to insist on expression of character as an ideal instead of mechanical perfection. For the great objection to mechanical perfection of work as an "ideal" was that it was an "ideal" which might be realised. The only goal worth striving for in art was that which could never be reached. In trying to express character their work would become full of suggestions of the infinite rather than statements of the finite. And that was the whole difference between art and science.

In the village near his home there was an old barn and a new church. The church, as they might suppose, was in the Gothic style of architecture. It cost about 20,000*l.*, and because it had cost so much, not only the inhabitants of the village, but the majority of those in the neighbouring town, were all fully convinced that it was everything that a church should be. As a matter of fact, to the few who cared about such matters it was a building without a soul—a lifeless replica of the ancient art. It might be briefly described as a pious fraud. And this was due not only to the conception of the design, but much to mechanical workmanship. Now let us consider the old barn. A thing of beauty within and without, not only from the tone and colour which time had given, but in all essentials of its structure. As a new building it was no less full of charm, and yet it did not pretend to any architectural style. It was merely a piece of building, and not an expensive building either. Great posts and beams roughly wrought supported its roof, and the whole structure was full of suggestions of infinite things. If they must worship under roofs, why could not they have such roofs as these to worship under? How strange was the whole conception of modern ecclesiastical art! Why should there be a special brand of art for ecclesiastical purposes? Why should they be only Gothic when they went to church? The real Goths were Gothic all the time—home and church were alike. How different had now become the modern villa and the modern church, and yet how alike in their lack of all that constituted beauty in building!

It seemed most vitally important that there should be some reform in this matter of mechanical workmanship before we could have any true building again. The central ideal they had to consider was the "ideal of truth." If they were to look around them at the creations of Nature there was one striking fact in them which would not be overlooked. It was that the forms of things were always the outcome of functions. The leaves and branches of the trees were all so shaped for certain definite practical purposes in the economy of the organism. The highest beauty—was it not perhaps the resultant of the closest obedience to the greatest truth? And if we applied this to art—to the building art in particular—we should find that its products, if they were to be true like the creations of Nature, must clothe themselves with forms which were the outcome of functions.

They must not, in designing a building, first appropriate a classic column and entablature, and a few other indigestible trifles, and then try and work them into their structure. It was the fatal influence of all these developed styles of the past which our students were set to study which led to all that unreal and histrionic architecture they saw about them to-day. Let them try and remember once for all that the forms and features of building had no reason for existence at all apart from their uses. Whenever the forms in building arrived naturally and obviously from the requirements of the structure they achieved a kind of almost vital beauty. The column, the arch, the buttress, and all the features of Gothic art thus lived once. But if they tried to build up a Gothic church out of such features they would find it could not be done. There was a better way than that. First cast aside all the useless lumber of the past, which would only obscure the real problem before them, and then let their building to a great extent design itself, its forms evolving themselves naturally from the conditions. No one was bound to produce ornate and expensive-looking architecture. We were not obliged to be bombastic and diffuse in our statements in stone or timber any more than in our words. But we were all bound under penalties to be true. Let them at least be true, if they could, at any cost.

Nothing was so essential to a building as the quality of truthfulness and reality. Why did we admire so much those fine old structures of half-timber work in old English villages? It was not merely because of their superficial charm, but mainly because we recognised their inherent truth. The whole arrangement of their timbers represented the actual structure of the building, and we should find throughout the same principle. Everywhere we found function expressing itself in form naturally and inevitably. The creators of these dwellings had not, it was true, our modern advantages of education and research. They knew nothing of classic temples or of buildings designed in other lands. They worked out their own local problems in their own way unencumbered by unnecessary knowledge, and so could bring the whole of their unbiassed intelligence to bear on what they had to do. And the essential fact about their work was its unpretentious reality.

As to what might be called the "Ideal of Novelty," we touched here the politics of art. They might be Conservative, Liberal, or Radical, as they would. It was better to belong to no such parties, but to let their desire to conserve and hold fast old things that were good never deter them from as eagerly accepting new things which were good, or from radically rooting out all things that were bad. Thus they would never merely accept old things because they were old or new things because they were new; but select from each the good thing because it was good. They should not be too ready to scorn what was called the "New Art." It was true the greater part of it was sorry stuff; but they would still find, amongst much that was affected and bizarre, here and there the right note struck—here and there the new thing which was also a good thing. It must also never be forgotten that all the old work we admire so much was new once, and when it first appeared it must have been as startling in its novelty as any of the products of the "New Art" of our day. What a marvellous innovation must have seemed that first creation of the delicate beauty of Early Gothic art, when compared with the clumsy, rude, barbaric Norman work. And art, if it was alive, must always so change and develop, for in the continual flux of human affairs to stand still was to fossilise and decay.

As to the "Commercial Ideal" in building—the outcome of the mind which thought in terms of pounds, shillings, and pence—we found this expressed on all sides by buildings which were mainly valued and wondered at because they looked expensive. Now, although it was undoubtedly true that the range of an artist's opportunities might be increased by allowing him the use of all the precious materials the earth yields, yet the final value of his work must be measured by the degree of skill with which he used his materials, however poor or rich they might be, and not by the value of the materials themselves. A well-designed statue in common clay was better than one badly wrought in precious marble. And in building the humblest materials would give us opportunities not to be despised. It was unfortunate that so many of the larger modern buildings were necessarily entirely commercial in their functions. They were places primarily for getting and spending money in. It was necessary that they should reek of wealth. And then they must sufficiently impress all those silly droves of people who went about the world foolishly gaping at fine buildings, and whose ideal of life was represented by surroundings which emulate what Mr. Chadband called "the mansions of the rich and great."

The next false "ideal" which they had to consider was the "utilitarian"—the more insidiously dangerous because it was half true. No one could deny, for instance, that houses should be conveniently planned and fitted with all proper appliances for comfort. But the man who could not live by bread alone was repelled by all this mere utility. All the material advantages which Mr. Wells looked forward to in the future house—the electric stoves for heating, and all those appliances for saving labour which in the end reduced the whole function of living to the touching of a button—all seemed inspired by that inhuman calculating demon which lurked in all mechanical devices. As Walt Whitman said, "There are divine things more beautiful than words can tell." Divine things! Yes, when man was most truly himself he would be satisfied with nothing less than those. It was the whole mission of art to supply that demand; and in no better way could it be supplied than in those constant influences which our homes exert over our lives. But in order that we might benefit by such influences, we must try to rise above modern materialism, and believe, with Walt Whitman, that there were divine things in nature and in art.

On the motion of the Chairman, a hearty vote of thanks was accorded to the lecturer, and the proceedings terminated.

ANCIENT BUILDINGS AND THEIR INFLUENCE ON MODERN ARCHITECTURE.

At the Carpenters' Hall on Thursday evening, March 11, Mr. Thackeray Turner, F.S.A., gave an address on "Ancient Buildings and their Influence on Modern Architecture." Sir Aston Webb had consented to take the chair, but the Master of the Company announced that, owing to influenza, Sir Aston was unable to be present.

Mr. Thackeray Turner said the thought which ran all through his paper was the question of copying; but, first, he would like to say how very important the work of architecture was to the nation. It was generally admitted that all the arts were of importance to the human race, but it had to be remembered that painting, sculpture, poetry, and literature need not necessarily affect a man's life. A man might go through the world and keep clear of them, but he could not avoid architecture. Whether a man lived in town or country he could not help seeing the houses of man and the houses of God. Some people prided themselves that they could go through the world and be unaffected by their surroundings, but it was neither desirable nor natural for a man so to live. If anyone really thought about it they would admit the great influence of buildings on man; if the buildings were good they would do good, and if they were bad they must surely do harm. This being so, how great was the responsibility of the architect. While, however, the architect had responsibility, yet the client, who was

the paymaster, had also a large share, and often he was very much governed by public opinion. Consequently it was the duty of the public to try and understand the problems before the architect and to form a right judgment; the mere fact of the public interest being shown could of itself have a great effect upon architecture. There was one remarkable characteristic of mediæval buildings, which was that no matter whether the building be cathedral or church, castle or country house, farm or cottage, one and all, without exception, beautified the works of nature. In the present day ninety-seven out of a hundred buildings put up disfigured town and country and were an eyesore. They rejoiced in a country town where a pretty old shop-front gave place to one large sheet of glass, and the modern cottage, built in full compliance with the building by-laws, stood up gaunt and tall, with probably the soil pipe taken well up above the roof as the most prominent feature. In considering the effect of old buildings on modern buildings, it could not be too clearly understood that archæology was not architecture. Archæology was a very pleasant amusement, and might be considered a branch of history, but, as a matter of fact, in so far as a man was an archæologist he was apt to be a bad architect. In these days they must keep clearly in their minds what they meant by architecture. They had the Tower Bridge for example, which was a cleverly contrived iron erection hidden by slabs of stone, whilst the steel frame houses being put up were engineering works, and the sham stone jackets were tomfoolery, if nothing worse. He had no wish to put any hindrance in the way of engineering works or temporary buildings, but he wanted to see them proclaimed for what they were, and not pretend to be something else. Progress in building stopped in this country with the development of restorations. There was a confusion of ideas as to what restoration really was, and the true sense of restoration meant bringing back or replacing that which had been removed or displaced. What people generally meant by it, however, was making a new thing in imitation of that which had gone. Restoration, roughly speaking, was a thing unknown of until just before the end of the XVIIth century. At that time there was no appreciation of the historic and beautiful qualities of mediæval buildings; the art of producing such buildings had died out and given place to the Renaissance style of architecture. About the middle of the XVIIIth century, when this Renaissance style was in its last gasps, the artistic and romantic qualities of mediæval architecture began slowly again to obtain a hold upon the nation. The Gothic revival coincided with a strong revival in the established church, and in the minds of many people Gothic architecture was religious architecture; but this, of course, was a great mistake, and a suggestion which would have astonished the mediæval builders very much. The pioneers in the Gothic revival were fully convinced that their wish to reproduce Gothic work in the present day could be attained. They learned all about the styles of Gothic architecture, and they desired to see all buildings in one style. He did not see that they were justified in finding fault with those men—at any rate, for the first fifteen or twenty years of the movement; but it did seem extraordinary after many lamentable failures that they should have persisted in that mistaken course. It was necessary for the restorer that he should be able to make new work in imitation of the old, but he (the speaker) denied that this could be done. He, personally, had never seen a piece of new stone or woodwork made in imitation of the old which had given him one single spark of joy or pleasure. It was not until he become Secretary of the Society for the Preservation of Ancient Buildings that he began to realise what really blocked the way in the progress of architecture. He saw the irreparable damage which was being done to existing architecture all over the country by restorations, and it seemed to him, on the whole, that the architects who were doing the best building were those who did not undertake restorations. The whole point was that they could not exactly reproduce mediæval work. He did not mean the quality of age, for he believed, with William Morris, that the mediæval buildings must have been more beautiful when just finished than now. The question of copying was the key of the situation in approaching the subject of modern architecture. Copying as such must always fall short of the original. If it was better, then the producer must have put something into it, and it ceased to be imitation. A work of art was the result of very strenuous thought, and could not be produced without careful training and moral study. A fine building would appear fine to the beholder even when he was too far off to see any detail, and it would appear fine to the short-sighted person. He would go further and say that they could have an absolutely beautiful and impressive building although it was absolutely free from ornamental features. They could not obtain a fine building without sacrifice. The old builders made the sacrifice of thought and trouble, and one of the most striking characteristics of mediæval architecture was that they could not find two buildings alike. Nowadays they knew hundreds of houses would be built from the same plans, and one man would do the thinking for hundreds of working-men. The old builders thought as the work went on, and they could see their ingenious arrangements in the old churches, and how they changed their minds when they thought they could make an improvement. They attached no importance to accuracy of workmanship, except so far as the joining of the materials together was concerned, but in these days people cried out if a moulding was one inch out of the straight. The restoring architect, when he had an ancient building placed in his hands, thought how he could improve it, and had his attention centred on its architectural features, but the repairing architect in similar circumstances thought how he could preserve its beauties and historical truths, and had his attention centred on its structural condition; and the two standpoints were fundamentally different. The first, to his mind, was a bad training for the architect, and the other a good training. It was obvious that the structural question should come before the ornamental question. Anyone who devoted his energies to repairing ancient buildings properly would become a good builder, and he boldly asserted that good building could produce good architecture. By paying careful attention to the plan of construction and using suitable materials the result would be good architecture, although there might not be a single ornamental feature to his building. The architect might be influenced by the spirit of classical architecture, in which case he would aim at symmetry or be influenced by Gothic architecture, in which case he would avoid symmetry; but one would not accuse him of copying either style. It was only when the decorative features of a building were copied that the question of style came in, and if the architect was worth his salt he would be able to design any little ornament he thought the building required without copying. Proper building materials were of great importance in architecture, and all architecture had been largely governed by them, and yet, strange to say, they seemed to have received less thought and care than any other side of the question. Great facility in drawing also led many architects astray—the architect made a pretty drawing and then tried to build like it. Further, then they had to show their drawings to their clients and tried to please them. This was unfortunate, because drawings did not properly represent the materials and colour, and so the backbone of beautiful architecture was left out altogether. A proper study of ancient buildings would show how suitable construction was obtained and the use of proper material; and, further, it brought home the absence of mathematical symmetry in the old builders. It was perfectly reasonable for architects to use what they might call the inventions of building, but he felt sure they were too careless in the use of modern materials which had not stood the test of time. He also thought that architects hindered progress by not getting help from their craftsmen, although that was largely due to their conscientious desire to do the work they were paid for. In conclusion, Mr. Turner remarked that he had said many hard things of architects, but the conditions of architecture had improved wonderfully in the last quarter of a century, and this, he thought, was entirely due to the unselfish efforts of architects. It was the general public who should now take the matter in hand, so that architecture should be encouraged.

A large number of lantern-slides were shown of buildings erected in recent years, which Mr. Turner considered were beautiful buildings, although they could not be said in any way to have copied ancient styles.

THE LONDON COUNTY COUNCIL.

THE weekly meeting of the London County Council was held on Tuesday in the County Hall, Sir M. Beachcroft, Chairman, presiding.

Loans.—It was agreed to lend Hackney Guardians 7,000*l.* for poor law purposes; Hammersmith Borough Council 9,468*l.* for electric lighting; and Poplar Borough Council 1,000*l.* for public conveniences. Sanction was also given to Lambeth Borough Council to borrowing 7,000*l.* for the erection of new Town Hall.

General Line of Buildings on the North-western Side of Euston-road between Ossulston-street and Churchway.—The Building Act Committee reported as follows:—

"We have from time to time had occasion to bring to the notice of the Council questions relative to the general line of buildings in Euston-road. We now have to report the erection by the Metropolitan Railway Company of a building on the forecourts of Nos. 110 and 112, Euston-road, in advance of the main fronts of the buildings in this part of the north-western side of the road. Before any action could be taken to secure the removal of this building, it was necessary that the general line of buildings in this part of the road should be defined, and we therefore requested the Architect of the Council, as Superintending Architect of Metropolitan Buildings, to define the general line of buildings in relation to the building in question. On December 19, 1908, the Superintending Architect issued a certificate to the effect that the general line of buildings on the north-western side of Euston-road, between Ossulston-street and Churchway, was formed by the main fronts of the buildings in that part of the road. Notices of appeal against this certificate were lodged with the Tribunal of Appeal on behalf of the Metropolitan Railway Company and the Midland Railway Company and others, and in view of the importance of the question we instructed the solicitor to support the certificate before the Tribunal. The appeal was held on February 4, 1909, and the Tribunal gave judgment on February 9, 1909, when they varied the certificate of the Superintending Architect and defined the general line of buildings as being approximately the fronts of the one-story shops, without giving any intimation of the considerations which guided them in their decision. Costs amounting to 110*l.* in all were awarded against the Council. Before judgment was delivered it was intimated to the Tribunal by all the parties that the unsuccessful parties would ask for a special case to be stated for the opinion of the High Court, and a formal application for the statement of a special case has accordingly been made. On November 17, 1908, the Council, on our recommendation, decided to take steps to obtain the decision of the Court of Appeal in the matter of the case stated by the Tribunal of Appeal with regard to the certificate defining the general line of buildings on the south-eastern side of Euston-road, between Duke's-road and Mabledon-place. The decision of the Court of Appeal in this case will not necessarily settle the question as to the correctness of the Tribunal's decision in the case now under consideration, as the arguments in the two cases were not identical, but as the cases are very similar we do not propose to consider as to recommending the Council to proceed with appeal to the High

Court in the later case until the Court of Appeal has decided the earlier case."

On the reception of the report, Capt. Hemphill said that on every occasion the Tribunal of Appeal decided against the Council in respect of the Euston-road building line. In the discussion which took place on the General Powers Bill in the House of Commons the suggestion was made that any appeal from the decisions of the District Surveyors should be made to the Tribunal of Appeal instead of to the London County Council as proposed, and he hoped the Council would submit evidence to the Committee which would consider the Bill to endeavour to have the appeal to the Council.

Architect's Department.—Replying to Mr. Goldsmith, Viscount Duncannon said the statement made in the House of Commons with reference to the London County Council (General Powers) Bill, that the number of technical assistants of the Council would be increased from 400 to 600 if the Bill became law was not correct. The number of technical assistants on the staff was now eighty-seven, and on the unestablished staff 110, making a total of 197.

School Works.—It was agreed:—

"That, subject to the Council hereafter sanctioning the expenditure, the sum 1,000*l.* paid to the Council under the sealed scheme of the Board of Education for the administration of the St. James-the-Less (N.) School Foundation (Bethnal Green, N.E.) be utilised in virtue of the provisions of the scheme for the erection of a housewifery centre at the Daniel-street London County Council school (Bethnal Green, N.E.).

That the estimate of expenditure on maintenance account of 360*l.* for the year 1909-10, in respect of structural alterations at the Saffron Hill School (Holborn), be approved.

That the estimate of expenditure on capital account of 7*l.*, submitted by the Finance Committee in respect of lithographing quantities in connexion with the erection of a handicraft centre on the Park-walk site (Chelsea) for the accommodation of forty boys, be approved.

That the estimate of expenditure on capital account of 272*l.*, submitted by the Finance Committee in respect of taking out and lithographing quantities in connexion with the enlargement of the Amberley-road school (Paddington, N.) by 644 places, be approved.

That the estimate of expenditure on capital account of 182*l.*, submitted by the Finance Committee in respect of taking out and lithographing quantities in connexion with the erection of a higher school for the accommodation of 304 children, be approved."

The Works Department.—The Works Committee submitted statements of works completed during the half-year ended September 30, 1908.—Statement I. contained all works completed during the half-year with the exception of certain paving work at Kingsway, which, as all the liabilities had not yet been ascertained, could not now be reported. In four cases had the cost exceeded the final certificate of value. The Committee reported as follows:—

"The total cost of the works included in the statements now presented does not represent the expenditure of the Department during the half-year, because much of the expenditure on these works occurred previous to the half-year, while on the other hand much of the expenditure during the period was upon works which are still unfinished. The expenditure on works executed by the Department during the half-year was approximately 120,000*l.* The expenditure in the preceding half-year was 250,000*l.* The number of estimated works referred to us for execution, and not yet included in the half-yearly statements of completed works submitted to the Council, is nineteen, for which the estimates amount to approximately 1,095,000*l.* Only about 10,000*l.* remains to be spent on these works, all of which, with the exception of the improvements at Pritchard's-road school, will probably be completed by March 31, 1909, when the Department will practically be closed down, although the works at Pritchard's-road school will not be finished until three or four months later."

The consideration of the report was deferred.

Vauxhall Fire-station: Subletting.—It was agreed:—

"That Spencer, Santo, & Co., Ltd., be allowed to sublet portions of the work of enlarging the Vauxhall fire-station referred to in the resolution of December 15, 1908, as follows, viz., the steelwork to Redpath, Brown, & Co., Ltd., the casements to the Crittall Manufacturing Company, Ltd., the slating to Messrs. Williams, Smith, & Evans, the granolithic work to Messrs. Malcolm, Macleod, & Co., and the asphalt work to La Brea Asphalte Company, Ltd."

Having transacted other business, the Council adjourned.

APPLICATIONS UNDER THE LONDON BUILDING ACTS, 1894 to 1908.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Acts, 1894 to 1908. The names of applicants are given between parentheses:—

Lines of Frontage and Projections.

Brixton.—Retention of a wood, glass, and zinc roof at the side of No. 144, Coldharbour-lane, Brixton, abutting upon Eastlake-road (Mr. F. Karno).—Consent.

Clapham.—A building on the southern side of High-street, Clapham, to abut also upon the western side of Cato-road (Mr. A. C. Thomas for Temperance Billiard Halls, Ltd.).—Consent.

Deptford.—A building on the eastern side of Briant-street, New Cross (Mr. L. V. Hunt for the British Colour Printing Company, Ltd.).—Consent.

Lewisham.—A house on the eastern side of Garthorne-road, Honor Oak Park, to abut also upon the northern side of Agnew-road, with projecting bays and a porch (Messrs. Dunsmore Brothers).—Consent.

St. George, Hanover-square.—A balcony in front of No. 19, Upper Grosvenor-street, St. George, Hanover-square (Messrs. Matthews, Rogers, & Co.).—Consent.

Southwark, West.—An iron and glass shelter in front of a proposed building to be known as King's Hall, on the north-western side of St. George's Market, Southwark (Mr. W. F. Hurndall).—Consent.

Wandsworth.—That the application of Messrs. Taylor & Sons, for an extension of the periods within which the erection of buildings on the eastern side of Streatham-hill, Wandsworth, was required to be commenced and completed, be granted.—Consent.

Wandsworth.—That the application of Messrs. Hill & Tyler, for an extension of the period within which the erection of two houses on the northern side and two houses on the southern side of Baldry-gardens, two houses on the northern side and one on the southern side of Heybridge-avenue, and sixty-six houses on the eastern and western sides of Copley-park, Streatham, with projecting porches and wooden oriel windows, was required to be completed, be granted.—Consent.

Woolwich.—A greenhouse at the flank of No. 1, Earlshall-road, Eltham, to abut upon Craigton-road (Mr. C. Burbridge).—Consent.

Woolwich.—Bay windows and projecting hoods to thirteen detached houses on the northern side of North-park, Eltham (Messrs. Whistler & Worge).—Consent.

Clapham.—A porch in front of No. 57, Shelgate-road, Clapham Junction (Mr. B. Bramley).—Refused.

Lewisham.—Buildings on the eastern side of Bromley-road, Catford (Messrs. Norfolk & Prior for Mr. J. Watt).—Refused.

Width of Way.

Southwark, West.†—Buildings on the site of Nos. 59 and 61, Webber-street, Southwark (Mr. W. Egerton for Maltina Bakeries, Ltd.).—Consent.

Lines of Frontage and Construction.

Strand.†—An iron and glass shelter in front of No. 8, Babmaes-mews, Jermyn-street, Strand (Messrs. New & Son for Mr. N. Lechmore).—Consent.

Lewisham.—The retention of a coal-shed at No. 33, Ewhurst-road, Lewisham, abutting upon Bexhill-road (Mr. J. Nicholls).—Refused.

Width of Way, Frontage, and Projections.

Wandsworth.—The retention of a wood and iron building of a temporary character at the rear of No. 213, Streatham High-road, Wandsworth, abutting upon Stanthorpe-road and Gleneldon-mews (Messrs. Holliday & Stanger).—Consent.

St. George, Hanover-square.—A one-story addition in front of No. 74, Ebury-mews East, Eccleston-street, St. George, Hanover-square (Mr. C. R. Evered for Mr. M. O'Gorman).—Refused.

Width of Way, Deviation from Certified Plans, and Projections.

Strand.—Rebuilding of Nos. 5, 6, and 7, Spur-street, Leicester-square (Mr. G. Thrale Jell for Perry & Co., Ltd.).—Refused.

Space at Rear.

Hammersmith.—A modification of the provisions of sect. 41 with regard to open spaces about buildings, so far as relates to the proposed erection of an addition to a warehouse and stable on the eastern side of Paddenswick-road, Hammersmith (Messrs. J. S. Quilter & Son).—Consent.

Lewisham.—A modification of the provisions of sect. 41 with regard to open spaces about buildings, so far as relates to the proposed erection of two houses on the northern side of George-lane, Lewisham (Mr. F. E. Wright).—Consent.

St. George, Hanover-square.—A modification of the provisions of sect. 41 with regard to open spaces about buildings, so far as relates to the proposed erection of buildings at the rear of a house on the northern side of Upper Grosvenor-street, St. George, Hanover-square, abutting also upon the western side of Park-street (Mr. W. D. Caröe for Higgs & Hill, Ltd.).—Consent.

Formation of Street.

Dulwich and Norwood.—That an order be issued to Mr. C. E. Barry refusing to sanction the formation or laying out of a new street for carriage traffic to lead from Half Moon-lane to Herne-hill, Dulwich (for the Chairman and Board of Governors of the Dulwich Estates).—Refused.

Cubical Extent.

Bow and Bromley.—A deviation from the plans approved for the formation of an opening between two divisions of bakery No. 1 at the premises of Spratts Patent, Ltd., Morris-road, Poplar, so far as relates to the omission of windows and shuters to the openings on the ground floor (Messrs. Max Clarke & Garbutt).—Consent.

Uniting of Buildings.

Lambeth, North.—For permission to retain steel doors to an opening at Addington-street, Lambeth (Hayward Brothers & Eckstein, Ltd.).—Consent.

Southwark, West.—The uniting of No. 113, Southwark-street, Southwark, with No. 2, Burrell-street (Mr. A. Veness).—Consent.

Strand.—The uniting of Nos. 172 and 172A, Regent-street, Strand (Mr. E. Cannell for Mrs. Marcus).—Refused.

The recommendations marked † are contrary to the views of the local authorities concerned.

LONDON TRIBUNAL OF APPEAL.

THE Tribunal of Appeal, constituted under the provisions of sects. 175 and 178 of the London Building Act, 1894, sat on Thursday of last week at the Surveyors' Institution, Great George-street, Westminster, to hear an appeal made by Mr. G. Thrale Jell, on behalf of Messrs. Perry & Co., Ltd., under sect. 43 of the London Building Act, against the refusal of consent by the London County Council, by their resolution of February 2, 1909, to the rebuilding of Nos. 5, 6, and 7, Spur-street, Leicester-square. Mr. G. Thrale Jell appeared in person, the London County Council being represented by Mr. P. E. Dimes.

Mr. Jell, in opening his case, said that they submitted the necessary drawings to the London County Council, and on January 21 they thought it well to write stating two important points in the case. One was that there was a considerable amount of open space at the rear of the premises, which were practically new buildings; and, secondly, that they were not covering so much land as before. The total area of the site covered by the old building at the first floor level was about 1,493 ft. super.; the new building at the same level would be only about 1,377 ft., therefore they were giving up about 116 ft. of land to open space. The height of the old front wall was 45 ft., and the height of the new front wall would be 55 ft. The London County Council suggested that they should send in amended drawings, omitting the top stories of the building and sloping back the fourth floor. His clients informed him that, taking into account the ground rent and the cost of the building if the requirements of the London County Council had to be complied with, they could not afford to go on. They were of opinion that there was quite sufficient open space in the rear of the building, as shown on the drawings.

Mr. W. A. Ball, an architect and surveyor, of 2, Pall Mall East, deposed to having carefully examined the plans, and said he was of opinion that the Council had acted unreasonably in refusing their consent. He asked the Tribunal to either reverse the decision of the Council, or, in the alternative, to give a modified building line.

Mr. Hudson, Chairman of the Tribunal, pointed out that no alternative plans had been submitted, and the only question they could deal with was whether or not they upheld the Council on the existing plans.

Mr. Ball said he was afraid that if the Council insisted on cutting down the height of the proposed building, that would make it unremunerative, and his client would have to construct an office building on the site, which would not leave so much open space.

The Tribunal, without calling upon Mr. Dimes, dismissed the appeal, with 10 guineas costs.

THE BUILDER

MARCH 20, 1909.

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MEETINGS.

FRIDAY, MARCH 19.

Architectural Association.—Mr. J. A. Marshall on "A Lesson from the Past." 7.30 p.m.

Royal Institution.—Mr. R. Threlfall, M.A., F.R.S., on "Experiments at High Temperatures and Pressures." 9 p.m.

Royal Sanitary Institute (Lectures on Sanitary Science).—Mr. J. Osborne Smith on "Ventilation, Warming, and Lighting." 7 p.m.

Birmingham Architectural Association.—Mr. G. Salway Nicol on "Rome and Paris—Their Architectural Relations." 7 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. C. J. Guttmann, B.Sc., on "Some Aspects of Chemical Engineering." 8 p.m.

SATURDAY, MARCH 20.

Junior Institution of Engineers.—Conversazione at the Caxton Hall, Westminster. 7.30 p.m.

Royal Institution.—Professor Sir J. J. Thomson, M.A., LL.D., on "Properties of Matter."—IV. 3 p.m.

Edinburgh Architectural Association.—Visit to (1) St. Tridnam's Well, Restalrig; (2) Craigentinny House.

The Photographic Survey and Record of Surrey.—Annual general meeting, Club Room, Borough Polytechnic, 103, Borough-road, S.E. 4 p.m. A lantern lecture on the work of the Association at 7 p.m.

MONDAY, MARCH 22.

Surveyors' Institution.—Discussion on Mr. J. George Head's paper on "Giant London." 8 p.m.

Incorporated Institute of British Decorators.—Dinner at the Trocadero, Piccadilly-circus. 7.30 p.m.

Royal Sanitary Institute (Lectures on Sanitary Science).—Mr. W. C. Tyndale on "House Drainage." 7 p.m.

Royal Society of Arts (Cantor Lectures).—Mr. G. G. Stoney, M.Inst.C.E., on "Steam Turbines."—I. 8 p.m.

University of London (South Kensington).—Mr. Banister Fletcher on "Georgian Domestic Architecture," with lantern illustrations. 8 p.m.

TUESDAY, MARCH 23.

Royal Sanitary Institute (Lectures on Sanitary Science).—Professor H. R. Kenwood, M.B., on "Water: Composition, Pollution, and Purification." 7 p.m.

University of London, South Kensington (Lectures on French Painters).—Mr. Percival Gaskell, R.B.A., on "Some Later Phases of French Painting." 3 p.m. and 8 p.m.

Institution of Civil Engineers.—Mr. Arnulph Mallock, F.R.S., on "Construction and Wear of Roads." 8 p.m.

WEDNESDAY, MARCH 24.

Carpenters' Hall, London-wall (Lectures on Arts Connected with Building).—Mr. Laurence A. Turner on "Decorative Plaster Work." 7.30 p.m.

Edinburgh Architectural Association.—Mr. F. Morley Fletcher on "Materials and Treatment in Wall Decoration," illustrated by lantern slides. 8 p.m.

Northern Architectural Association.—Annual meeting. Exhibition of students' works and presentation of prizes. 7.30 p.m.

Royal Society of Arts.—Mr. J. Nisbet on "Afforestation and Timber Planting in Great Britain and Ireland." 8 p.m.

Institution of Civil Engineers.—Students' visit to Messrs. Gillett & Johnston's Steam Clock-factory, Croydon.

THURSDAY, MARCH 25.

Institution of Electrical Engineers.—Mr. J. H. Rider on "The Electrical System of the London County Council Tramways." 8 p.m.

FRIDAY, MARCH 26.

Royal Sanitary Institute (Lectures on Sanitary Science).—Mr. J. E. Worth on "Water Supply, Sources of Supply, and Distribution." 7 p.m.

Incorporated Association of Municipal and County Engineers (Metropolitan District Meeting, Room 13, Caxton Hall, Westminster).—(1) Mr. W. Challoner on "Concrete, its Aggregates and Mixing." (2) Mr. W. F. Loveday on "Design and Working of a Modern Destructor." 7.30 p.m.

SATURDAY, MARCH 27.

The Royal Institution.—Professor Sir J. J. Thomson on "Properties of Matter."—V. 3 p.m.

Junior Institution of Engineers.—Visit at 3 p.m. for the inspection of the electrification plant, etc., of the South London line of the London Brighton, and South Coast Railway.

Fifty Years Ago.

FROM THE *Builder* OF MARCH 19, 1859.

THE ARCHITECTURAL EXHIBITION, CONDUIT-STREET.

"LOOKING at the character of the works in the present Exhibition, we cannot but feel that if our art is in a hopeful, it is in some respects in a critical, state, and that anything said or written at such a time might help to throw back the progress by a space of many years. We have much evidence of delineative skill, abundant novelty, great articulation, if not study, of detail, and large use of coloured materials in exteriors, and still the mistake that display of a *style*, Gothic or Italian, or as the case may be, is display of the art. We are well aware that in noticing some of these points, we are looking at a number of drawings which, no more than in previous years, reflect exactly the builded architecture of the day. The 396 numbers in the catalogue, for drawings and manufactured articles together, seem to include a smaller proportion than previously of the drawings representative of works of actual execution. The more necessary, therefore, is it to warn the young of the little value of a drawing which has not reference to building, as to effect and construction; and, without losing the advantage to art of their new-born energy and enthusiasm, to point out to them, that they may be leaving the insipidity of the 'old school,' only to fall into errors equally removed from good architecture."

*** The architectural room at the Royal Academy at present represents the current work of the day much more than it formerly did; and that it does so is due largely, we believe, to the policy of some of the architect members of the Academy in discouraging mere pictures of ancient buildings—very good, perhaps, but not to the purpose. That is the defect of the architectural room at the Paris Salon, with its collection of splendid drawings, few of which represent the actual work of the day. On the other hand, we still miss, in London, the large and complete plans which the French architects exhibit.—ED.

Illustrations.

MESSRS. DEBENHAM'S PREMISES.

THESE premises were erected for Messrs. Debenham & Freebody between February, 1906, and September, 1907, the business of the firm being carried on throughout the building operations. It was necessary to work night and day on a considerable portion of the premises so as to enable this to be done.

The whole carrying out of the contract was executed by Messrs. George Trollope & Sons and Colls & Sons.

The external elevations are faced with Doulton's Carrara Ware, which has been found to withstand the ravages of the London atmosphere with a considerable measure of success.

The whole fronts of the building have been cleaned down since erection, so that they are practically restored to their original state after cleaning.

The plan of the premises consists entirely of large open shops and galleries divided by party walls of brick so as to prevent the spread of fire from one section to another, and each section is connected by means of doorways provided with double steel doors.

The basement, ground, and first floors are used throughout for retail business premises; the second floor is used for wholesale; and the upper floors for restaurant, fitting-rooms, and workrooms.

Throughout the whole of the premises a maximum of light has been provided for the purpose of business in which ample light is required for selecting and matching colours in the different materials.

The entrance-hall and staircase are lined throughout with marble, and the staircase fitted with bronze balustrading, and in the large galleries similar marble columns with bronze balustrading have been used.

The electric lighting throughout the business portion of the premises has been designed so that the light is thrown up to the ceiling reflecting downwards towards the floor, the lamps being concealed. This gives an excellently diffused light without any of the glare of large electric lamps and is found to be very successful.

The buildings generally have been constructed of steel and concrete, and are designed to carry very heavy weights on every floor; the roofs being of steel and concrete covered with asphalt.

The following is a list of the various subcontractors who have been employed upon the works:—

General contractors, Trollope & Colls & Sons; Carrara ware, Doulton & Co.; lifts, Otis Elevator Company; bronze caps and bases to columns, and balustrading, Singers; marble work, J. & H. Patteson; decorative plastering, Ernest Gimson, Gilbert Seale; metal-work, lettering, and electric fittings, Birmingham Guild of Handicraft; heating and ventilation, metal casements, Henry Hope & Sons; pavement lights, British Luxfer Prism Syndicate; mosaics, Rust's Vitreous Mosaic Company; steel doors, Crittal Manufacturing Company.

The architects are Mr. W. Wallace and Mr. James S. Gibson.

"PUTTERIDGE BURY," HERTS.

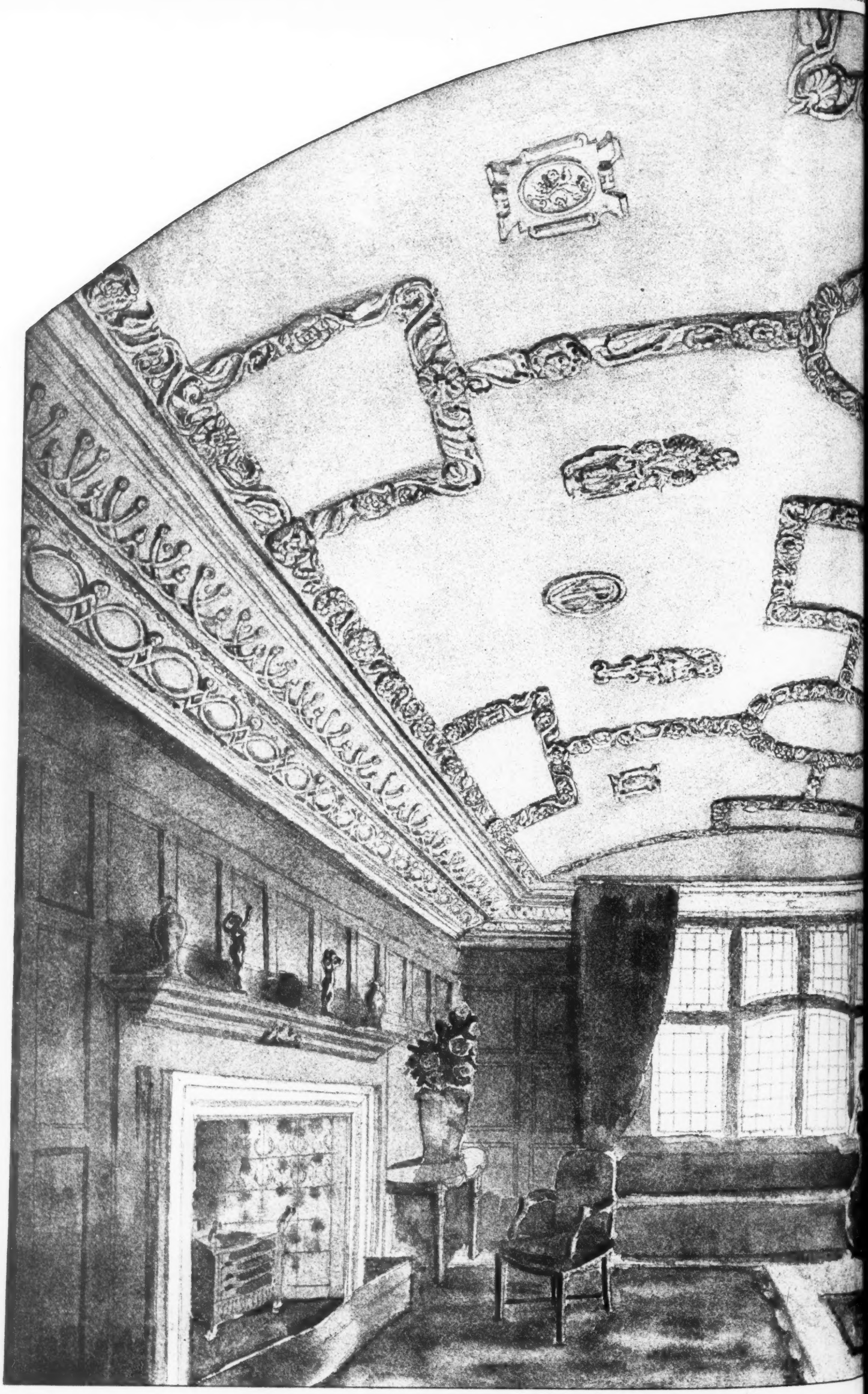
THIS house is now being erected a few miles from Luton.

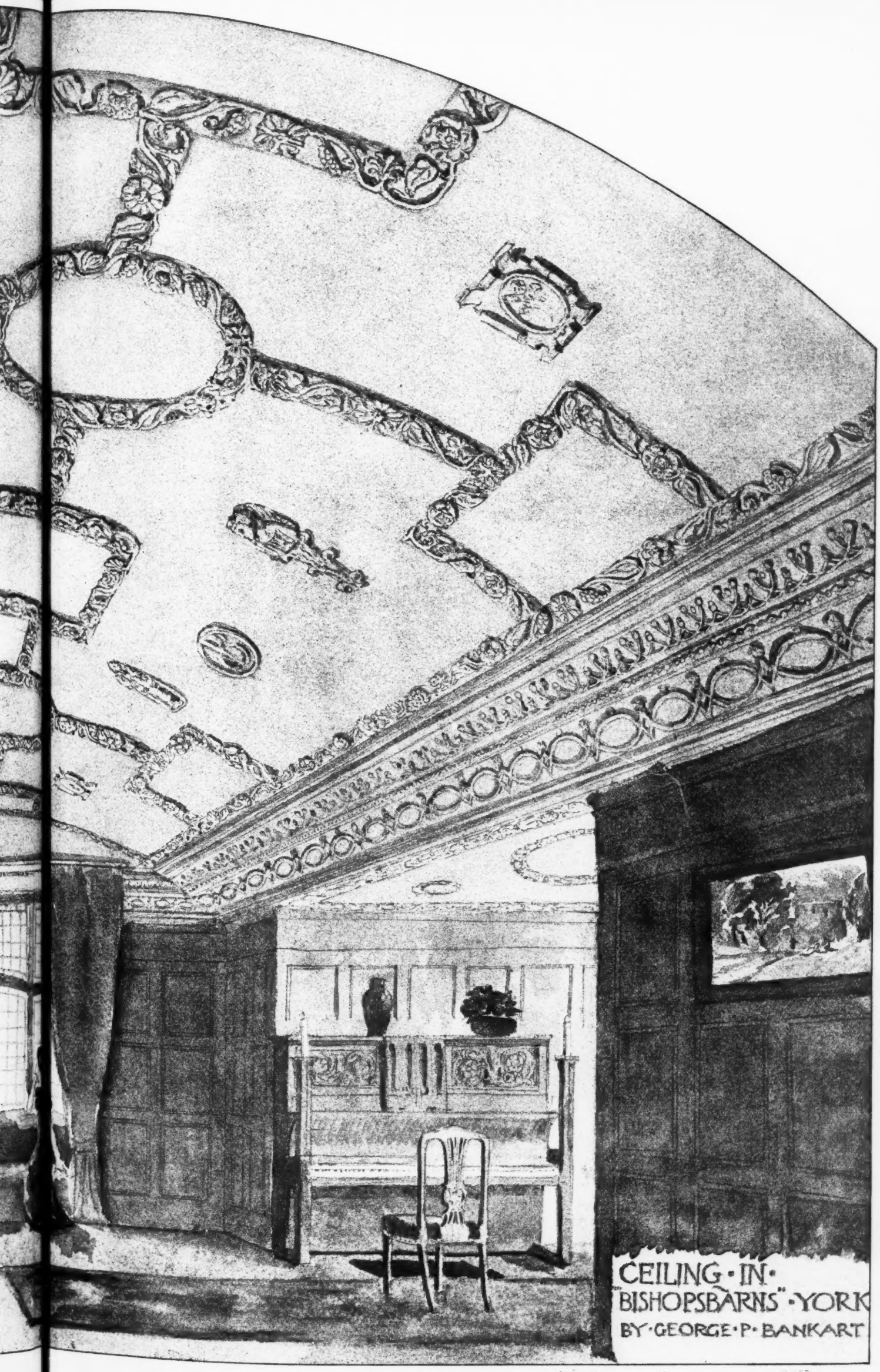
The house is entered from a forecourt by a vestibule, on each side of which are ample cloak-rooms for ladies and for men. The large hall to the south has stone arches opening upon the corridor, while a small door in the panelling gives access to the south terrace. The walls above the panelling are of stone, and the moulded beamed ceiling is of oak. The dining-room has a wagon ceiling of modelled plaster above its panelled walls. The billiard-room has an arched screen between the table and the non-players. In addition to the usual rooms is a ball-room, having a width of 28 ft., this room saving the house from disturbance on the occasion of a dance. The business-room and the gun-room are conveniently near the garden entrance and the back or luggage entrance (with its lift).

The office wing forms a quadrangle, and at its south-east corner upon the terrace is an arcaded loggia, the nurseries being over this south portion.

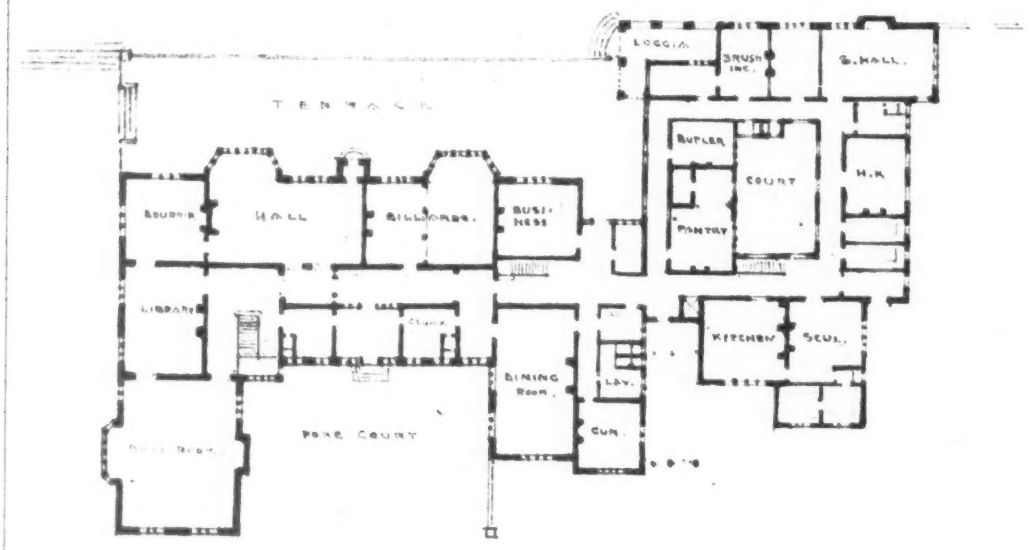
The building is of brick with Doulting stone dressings. The brickwork is of thin bricks six courses to the foot; and these are specially made on the estate. The house is stone-roofed.

The contractors are Messrs. Holland & Hannen, while Mr. Windebank acts as clerk of works. Messrs. Ernest George & Yeates are the architects. The drawing was exhibited in the last Royal Academy exhibition.





CEILING · IN ·
"BISHOPSBARNS" · YORK
BY · GEORGE · P · BANKART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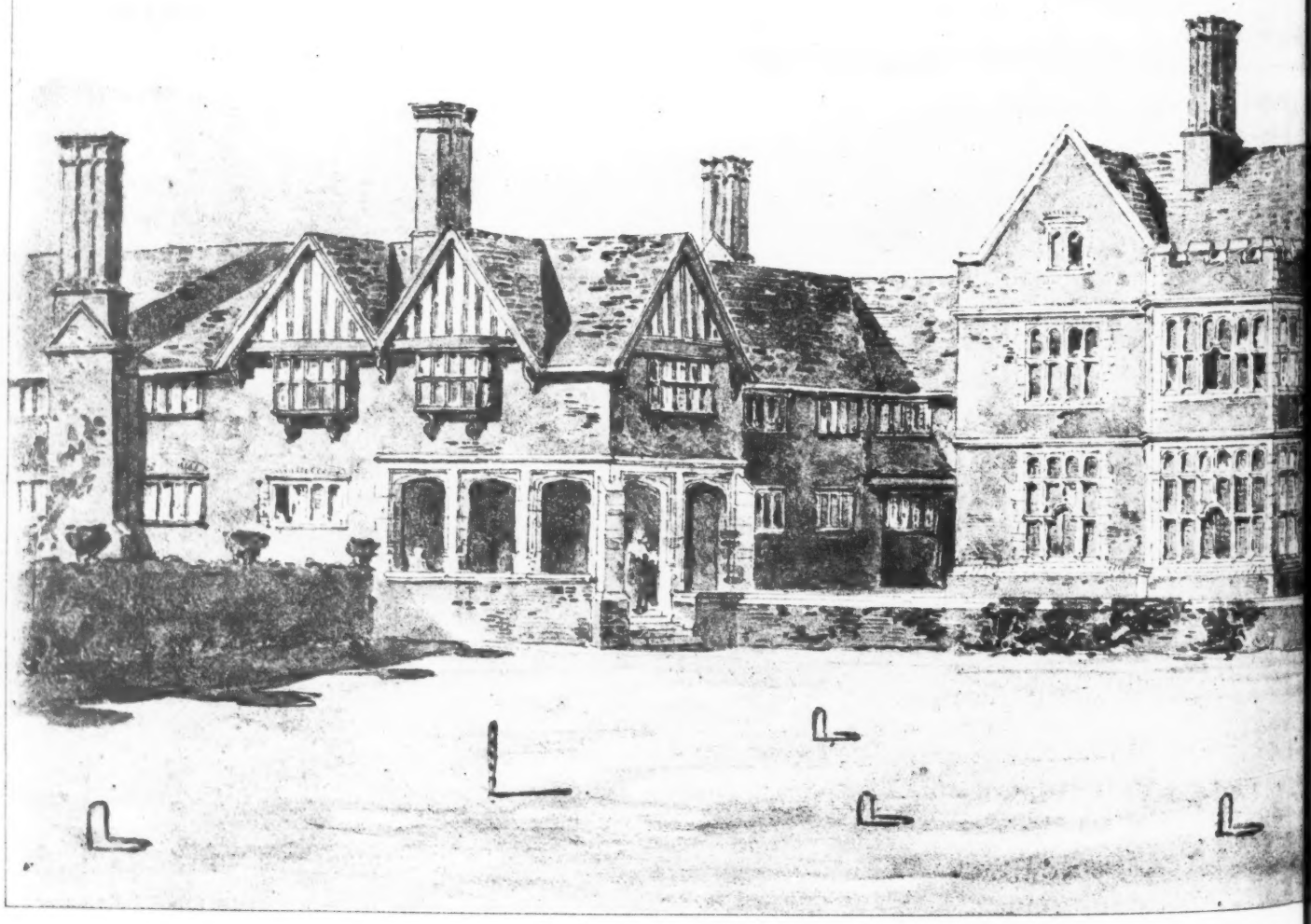


PUTTERIDGE BURY, HERTS
FOR T. M. CLUTTERBUCK, ESQ.
ERNEST GEORGE & YEATES, ARCHITECTS.

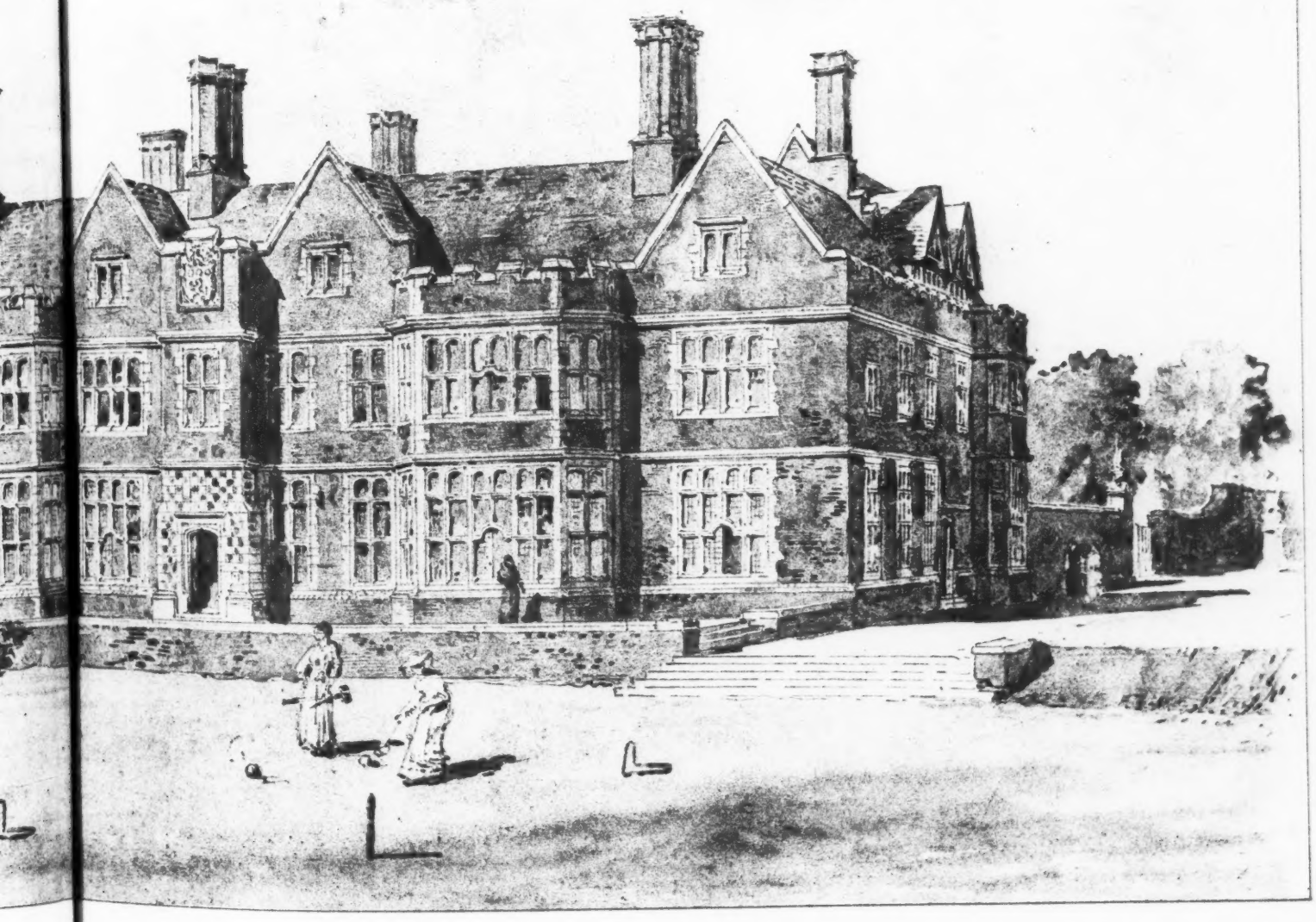


Photo by Sprague & Co., Ltd., London.

MESSRS. DEBENHAM & FREEBODY'S PREMISES, WIGMORE STREET.—MR. W. WA

IORE STREET.—Mr. W. Wallace and Mr. James S. Gibson, F.R.I.B.A., Architects.

FIRST FLOOR PLAN.

FOREST HILL, WIMBORNE.

FORSYTH AND MAULE, *ARCHITECTS.*

GROUND FLOOR PLAN

AN ARCHITECT'S HOME.

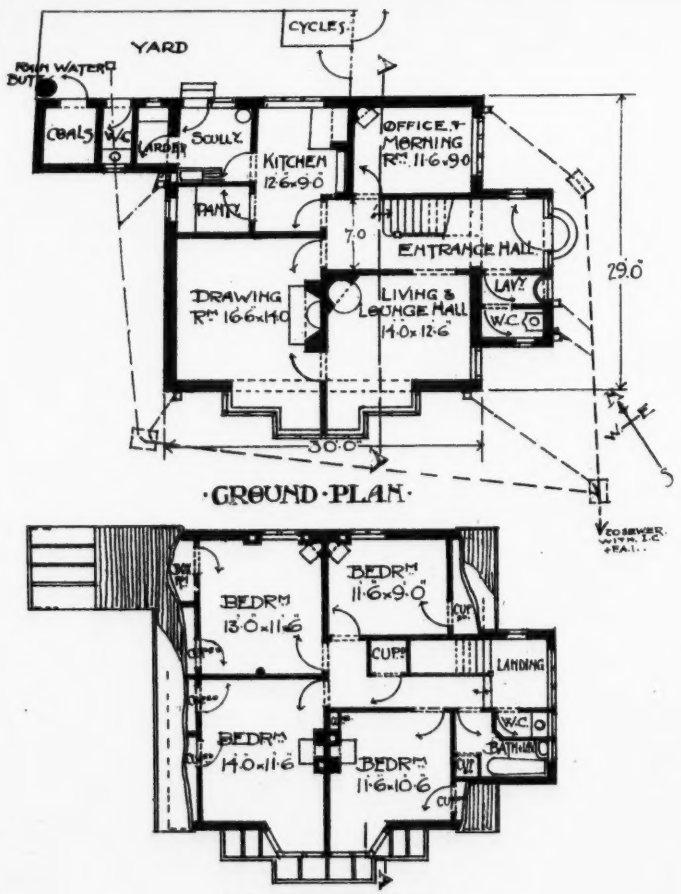
NEAR GERRARD'S CROSS.

CLEMENT O. NELSON, A.R.I.B.A.

AN ARCHITECT'S HOME.

NEAR GERRARD'S CROSS.

CLEMENT O. NELSON, A.R.I.B.A.



·GROUND·PLAN·

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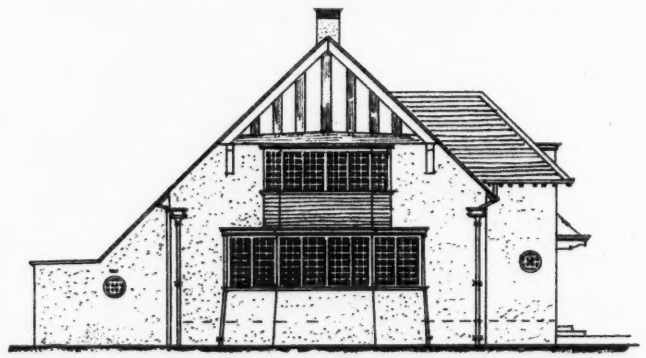

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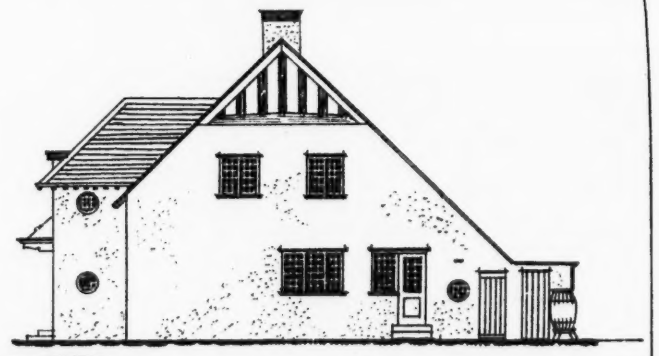
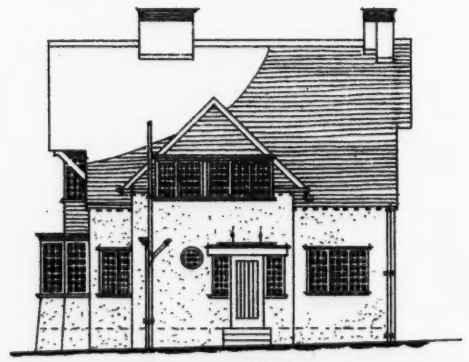
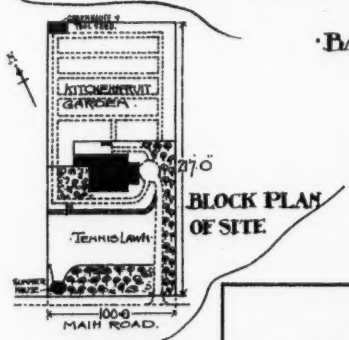


·BACK·ELEVATION·



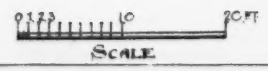
SIDE ELEVATION



BLOCK PLAN OF SITE

·ROOF·PLAN·

·SECTION·A·A·



SCALE.

PERSPECTIVE

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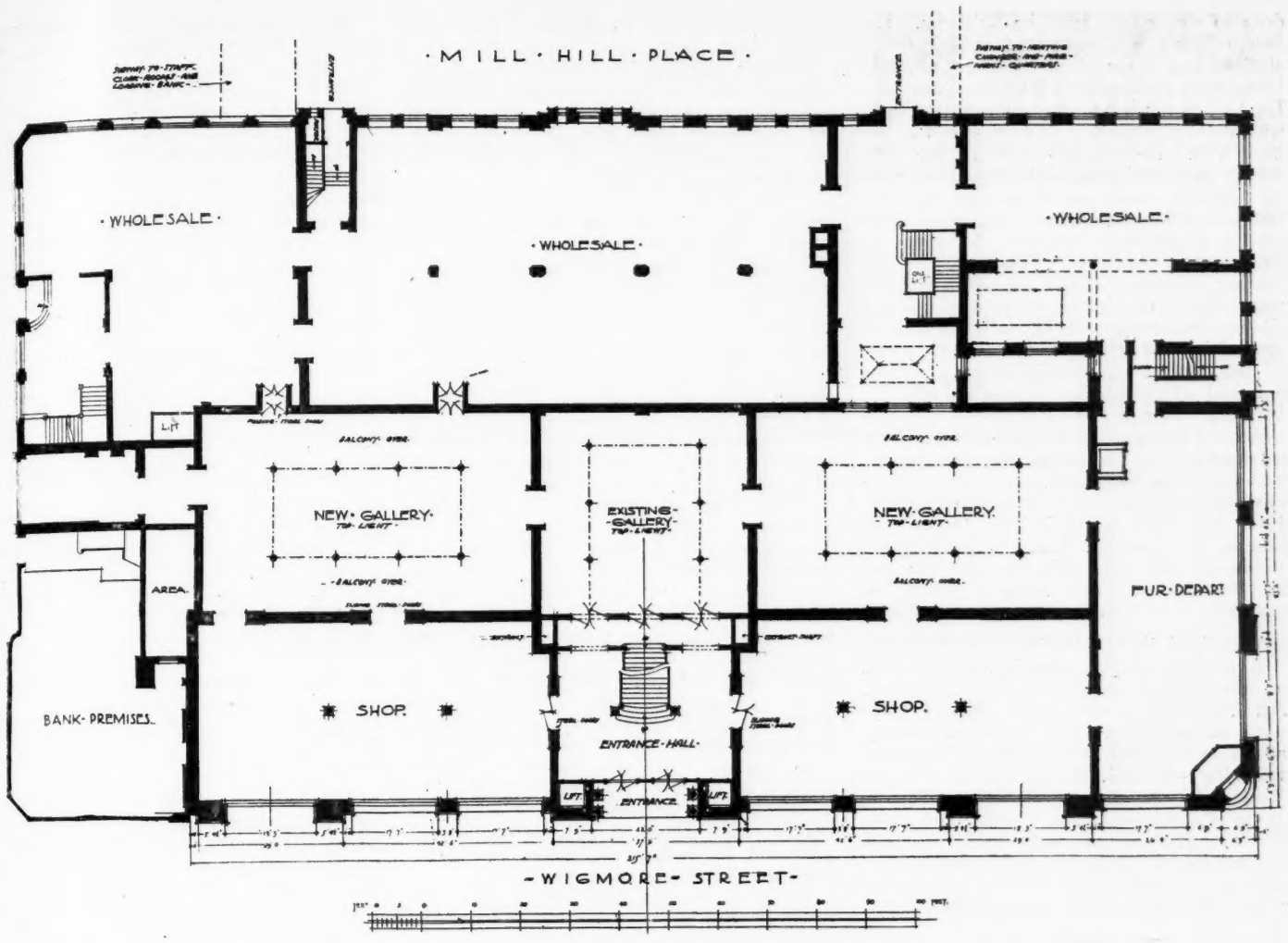

Messrs. Debenham & Freebody's Premises. Plan.

FOREST HILL, WIMBORNE, DORSET.

THIS house has been designed for a narrow ridge site, overlooking Poole Harbour. The exposed situation necessitated the use of hollow walls, which externally are covered with plaster. The chimneys are built in hand-made sand-faced bricks of varying colour, and the roofs are covered with hand-made tiles. The joinery throughout is in oak.

The illustration shows the house as originally designed in a drawing exhibited at the Royal Academy. It has been somewhat altered in execution.

The architects are Messrs. Forsyth & Maule, of London. The builders are Messrs. Mussellwhite & Sapp, of Basingstoke.

AN ARCHITECT'S HOME.

IN designing this little place an endeavour has been made to obtain a homely sunny house at the small cost of 400*l*.

The materials used are bricks and rough-cast and old grey tiles for the roof, with quite plain joinery and a little deal panelling. The windows have leaded casement lights.

The architect is Mr. C. O. Nelson, of London.

CEILING IN "BISHOPSBARNS," YORK.

THIS is the illustration of the ceiling to the music-room in the house named, designed and modelled by Mr. G. P. Bankart, who has done so much to revive the interest in plaster decoration.

Of the two Caryatid figures in two of the panels, one carries a model of the house, representing Architecture; the other a musical instrument, symbolising Music.

The six circular paterae in the other panels contain respectively the initials of the owner and his wife, and floral representations of the Four Seasons.

Architectural Societies.

LIVERPOOL ARCHITECTURAL SOCIETY.

The annual report of the Council for the official year 1907-1908 shows that the membership of the Society consists of fifty-six Fellows and sixty-nine Associates—total 125. There are two Hon. Fellows, nine Hon. Associates and twenty-three students. These numbers compare with fifty-seven Fellows, seventy-five Associates, two Hon. Fellows, nine Hon. Associates and thirty-five students at the close of last session. The improved financial state of the Society has enabled the Council to slightly increase the expenditure upon the library and for students' prizes, and to make a donation to the Architects' Benevolent Society.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.

At a meeting of the Society on Thursday, the 11th inst., Mr. Temple Moore read a paper, "The Use of the Gothic Styles in Modern Architecture." He dealt, he said, almost exclusively with ecclesiastical buildings, as fashion now favoured the modern Palladian manner for those of a civil class. Mention was made of the buildings of the Gothic revival, those by Pugin receiving a large share of attention. The lecturer deprecated the overcrowding of detail and ornament found in the Houses of Parliament, where the niches and panelling, though in themselves often excellent in design, became wearisome by endless repetition. He thought that this elaboration was due to the attempt to judge buildings from the examination of purely mechanical drawings. Skill in draughtsmanship, the lecturer considered, had hindered rather than tended to improve design, but in saying this he in no way deprecated good, sound, and accurate draughtsmanship. This was a necessity under modern conditions, but should be regarded as a means to an end, and not the end itself. The lecturer described the ordinary modern church with its commonplace design and detail, and the attempt at irregularity sometimes found in its plan, as if irregularity were of necessity the ideal of Gothic design. He sketched briefly what he felt was a better type, urging that each church should be planned for its site, laying great stress on the careful working out of the plan in relation to the site; this he regarded as an essential of successful building. He strongly urged the thorough and constant study of old work, not from illustrations, but from the buildings themselves. The modern tendency to rely on books and catalogues was responsible for much of the lifeless work of the present day. Good architecture could never be produced by such methods. Well-designed fittings could be obtained quite as cheaply as any of the atrocious articles found in the catalogues of the church furnishing shops. The same rule applied to the buildings themselves; material carefully and thoughtfully applied was no more costly than when the design was unstudied. First obtain a well-designed building, then strive to ornament and furnish it in a suitable manner, was his advice. These results could only be obtained by constant observation and study of the work of present and past ages, not only in this country but abroad.

EDINBURGH ARCHITECTURAL ASSOCIATION.

At a meeting of the Edinburgh Architectural Association Associate Section, recently held in their Rooms, 117, George-street, Edinburgh—Mr. J. Inch Morrison, architect, in the chair—a lecture on "Modern Materials" was delivered by Mr. James Salmon, F.R.I.B.A., of Glasgow. He said Edinburgh Castle silently dominates Princes-street, its shops and chatter. This grim mass, half human, half divine, stands over Edinburgh as aloof and mysterious as the Sphinx. It bears the same relation to the town of to-day as the Pyramid of Cheops

does to the tourist and the fallaheen. Mr. Salmon went on to state that, if the extreme stylists had their way, Edinburgh would become an architectural Madame Tussaud's. He had never heard any sane reason why we should not use the best materials in the best way. He thought that in the near future neither inflammable dwelling-houses nor schools would be tolerated. A large number of lantern slides were shown illustrating reinforced concrete buildings in Europe and America. These showed the leading systems. Other modern materials were described, illustrated by samples and slides. The lecturer held that the present system of rating added an artificial price to the cost of all material, especially that essential material which formed the site of a building. It was from Edinburgh that this system of legalised blackmail on architecture originated. It was ridiculous for anyone who knew the congested, squalid, and overcrowded dwellings of Scotland to say that there had been overbuilding. It was not merely the rent of land which retarded building, but the principle of selecting architecture as the special object of taxation.

ABERDEEN ARCHITECTURAL ASSOCIATION.

A meeting of this Association was held, on the 6th inst., in the Northern Arts Club. Mr. J. B. Nicol presided over a large attendance of members. Designs of a modern street front in granite were submitted by the following:—Messrs. Walter Rhind, John B. Levie, L. J. Smith, Robert Johnston, Douglas Jamieson, J. M. Easton, and J. K. Currie. The designs were dealt with one by one by the Chairman, who pointed out their merits and defects. A discussion afterwards followed on the various designs.

Engineering Societies.

THE INSTITUTION OF CIVIL ENGINEERS.

At the ordinary meeting on Tuesday, the 9th inst., Mr. James C. Inglis, President, in the chair, Mr. L. A. B. Wade read a paper on "Concrete and Masonry Dam Construction in New South Wales."

He said that in thirteen cases concrete walls curved in plan have been built for the storage of town water supplies, the resistance of the material in the wall and the sides of the valley being relied upon for stability, and complex questions of stresses being disregarded. The formula used for determining the thickness of a wall at any level below the highest water-surface was

$$T = \frac{R\ P}{S}$$

in which

T denotes the thickness at any level in feet;
R ,, ,, radius in feet;
P ,, ,, water-pressure in tons per square foot;
S ,, ,, stress in tons per square foot.

These vary as under for different materials, where D is the depth of water in feet:—

$T = R\ D \times 0{\cdot}0014$ when S is equal to 20 tons;
$T = R\ D \times 0{\cdot}0018$,, ,, ,, 15 ,,
$T = R\ D \times 0{\cdot}0023$,, ,, ,, 12 ,,
$T = R\ D \times 0{\cdot}0027$,, ,, ,, 10 ,,

The cross-section would be a triangle, but in practice it was advisable to make the top not less than 3 ft. 6 in. wide, increased according to the depth of water and the timber passing over in flood-time. The climatic conditions were against the formation of heavy ice. Nine of the thirteen walls were curved for the whole of their length; of the rest, the Cootamandra had two tangents of gravity cross-section, and the Tamworth, Parkes, and Woolongong walls each had one tangent of gravity cross-section. In all cases they abut against the rock sides of the gorges to their top levels. The gravity tangent at Parkes was constructed on a flat bench of rock at a level about 13 ft. below the top of the wall, the thrust of the arched length being taken by the gravity length, assisted by an anchorage of steel rails placed vertically, and connecting the wall to the rock foundation. The horns of the curve were more or less fixed by local conditions, and a radius giving a versed sine of about one-third formed the most economical location between those points. When this rule would not apply the radius might be advantageously altered to suit the configuration of the valley.

In two cases pressures of 24 and 25 tons per square foot had been allowed on hard granite, but later these limits had been reduced to 20 tons. Hard slate, sandstones, conglomerates, and ironstones were limited to 15 or 12 tons per square foot, according to quality, and softer sandstones to 10 tons. These limiting pressures applied to the walls rather than the abutments, as the end of the wall could be splayed, thus reducing the pressure per unit area in the abutments. The walls in all cases were of Portland cement concrete, with plums of greater resistance than the concrete, which was therefore the measure of the crushing resistance of the wall. The proportions of the concrete in all cases were 11½ cubic ft. of sand, 10 cubic ft. of shivers from ¾-in. to ⅛-in. gauge, and 13 cubic ft. of metal of 1½-in. gauge. The results of tests of concrete gave a mean crushing resistance of 50 tons per square foot when mixed with soft sandstone, and 100 tons with sound igneous rocks. It had been assumed that concrete in bulk offered a crushing resistance one and a half times greater than that of unsupported 6-in. cubes. The maximum pressures allowed on different materials gave a factor of safety of five on results from unsupported 6-in. cubes, which, if the assumption of increased strength were correct, would be seven and a half for concrete in bulk.

The section of a wall of 500 ft. radius to resist 20 tons per square foot and of a wall of 270 ft. radius to resist 10 tons per square foot closely approximated to that of a gravity wall for a similar depth of water. The author was of opinion that gravity walls should be made straight, a curve having no advantage as regards strength or adaptability to meet contraction sufficient to justify the increased quantities. The economical limit justifying substitution of curved for gravity walls was with radii somewhat less than the foregoing, bearing in mind the greater length of a curved as compared with a straight wall; thus the use of curved walls was restricted to comparatively narrow valleys and gorges

Igneous rocks as foundations proved the most impervious media against leakage. In the case of granite all soft seams was followed up. In sandstones and conglomerates the weaknesses were found along horizontal beds, and in cases leakage occurred under the flanks of walls, water entering some distance up-stream, the exit being some distance down-stream. In two instances short drives were carried under the flank of a wall to cut out weak places, being filled again with concrete and grouted through drill-holes under pressure. The worst leakages had been experienced in shale and slate. The proportions of materials used in concrete were sufficient for the required resistance at a minimum cost, but were not sufficiently impervious for a thin wall. In earlier walls a 6-in. facing of special concrete was placed on the up-stream side, for watertightness. Subsequently it was found that by working the sloppy concrete *in situ* against the mould boards a skin was formed on the surface and a practically impervious wall was obtained. When, however, surplus water dried out, vertical cracks developed. Further experience showed that longitudinal contraction was less in a wall of concrete placed *in situ* fairly dry and well rammed, and that cracks either did not occur or occur only to a much less extent; but a skin could not be obtained, and thin walls leaked excessively. It was found that two coats of neat cement applied as the timber was stripped gave good results and did not scale, owing to the absence of frosts.

Cracks had appeared more or less in the Parkes, Cootamundra, Tamworth, Wellington, and Mudgee dams, but no failures had resulted. No cracks had appeared in any of the other dams. The cracks in the Mudgee dam were more open than those in dams constructed of dry concrete. Vertical cracks in all cases twist in their course, inwardly as well as vertically, and open and close with change of temperature; they almost disappear with high temperature and low-water level and cold temperature and high-water level, and open most with cold temperature and low-water level. They occur as a rule at quick changes of foundation level. The author was of opinion that such vertical cracks, as they occur naturally, did not endanger the stability of the walls; but, as they were likely to develop, it was better to provide parting joints to allow of the cracks forming on radial lines, spaced at intervals, than to allow them to occur naturally. Iron built horizontally into the top level of walls had been suggested to prevent vertical cracks, but the author thought this would lead to horizontal cracks. Iron might be built in if the parting joints were provided and if it did not cross the joints. In the opinion of the author the experience gained of these structures since the first was completed in 1895 showed that curved walls relying for their stability on their resistance to crushing formed a safe and economical means of storing large bodies of water.

Cataract Dam for Sydney Water Supply.

This dam was straight in plan and would retain about 21,500,000,000 gallons of water, covering an area of 2,400 acres. The dimensions were:—

	Feet.
Length of wall	811
Height above river-bed	157
Depth below river-bed	35
Total height—base to top	192
Top width	16½
Bottom width	158
Maximum depth of water stored	150
Length of spillway weir	715

The highest estimated flood level was 4 ft. 6 in. over the spillway weir. The material of which the dam was constructed was local Hawkesbury sandstone, and its maximum crushing stress was limited to 8½ tons per square foot. A system of 6-in. rectangular conduits filled with broken stone, parallel to and about 6 ft. back from up-stream face, was constructed to drain the interior of the wall, and these conduits were again drawn into 6-in. earthenware pipes, laid at right angles to the wall, with exits on the down-stream face. The sandstone, from experiments, gave a crushing strength of 276·3 tons per square foot on 12-in. cubes, unsupported. Tests on concrete at ninety days gave an average of 113·5 tons, and mortar, for hearting, about 102 per square foot.

The remainder of the paper dealt with the construction of this dam.

THE JUNIOR INSTITUTION OF ENGINEERS.

A large number of members of this Institution, with the permission of Messrs. J. & E. Hall, Ltd., recently paid a Saturday afternoon visit to their extensive refrigerating machinery and automobile works at Dartford. Under the guidance of Mr. Hesketh, the managing director, and members of the staff, they were shown over each department, the machinery being kept running in order that the various special processes could be seen in operation. These included in the boiler shop the electric welding and bending of the coils, coil testing, and acetylene welding; in the automobile machine shop gear-cutting, capstan lathes, and other tools, jigs, special tools and gauges; in the large machine shop attention was directed to a compressor boring-lathe, quick planers, and other interesting machinery devices for the accurate and speedy production of the parts required in the making of a CO_2 plant, and of the automobiles for which the works are so well known. A complete CO_2 machine was shown running in the erecting shop,

and the method of testing was fully explained. The machine consists essentially of three parts—the compressor, the condenser, and the evaporator. The compressor is the only moving part, and is simply a compression cylinder and piston of special design for compressing the CO_2 up to liquefying pressure, the gas drawn in being that which has done its work already in the compressor and become vaporised. The liquefication takes place in the condenser, consisting of a coil of pipes immersed in water. The liquefied CO_2 then passes into another series of coils immersed in a tank of water or brine, and the evaporating process takes place therein, the heat necessary for the conversion of the liquid into vapour being absorbed from the surrounding water or brine, thus reducing it to any desired temperature. The carbonic acid gas is drawn off by the compressor, and follows the same round of compression, condensation, and evaporation as long as the machine is kept running. A steam, gas, or oil engine, electric or other motor drives the compressor. In the powerhouse two sets of Willans & Robinson engines, coupled direct to dynamos of 220kw. capacity were seen. All the heavier machines are driven by independent electric motors, and the rest in groups by the same form of motive power.

SOCIETY OF ENGINEERS.

The "Status Prize" will be awarded by the Society of Engineers each year for the next five years ending 1913 (if papers of sufficient merit are received) for the best paper written by any person on the subject of "How to Improve the Status of Engineers and Engineering, with Special Reference to Consulting Engineers." The prize will be three guineas' worth of books or instruments to be chosen by the successful author. Further particulars may be obtained from the Secretary of the Society of Engineers, 17, Victoria-street, Westminster.

BOOKS RECEIVED.

SANITARY ENGINEERING. By Colonel E. C. S. Moore, R.E. Third Edition: revised by E. J. Silcock, M.Inst.C.E. (B. T. Batsford. 2*l.* 2s.)

AUSTRALIAN ARCHITECTURE. By Robert J. Haddon, Architect. (Melbourne and Sydney; Geo. Robertson & Co. London; B. T. Batsford. 15s.)

THE ANTIQUARY. Vol. XLIV.: January-December, 1908. (Elliot Stock. 7s. 6d.)

Correspondence.

BATH-STREET, BATH.

SIR,—Will you permit me to express my grateful thanks, and certainly also those of a large number of persons in this place, for your excellent and timely article on the proposed demolition of the north side of Bath-street?

It is clear that the value of the street from the architectural, historical, and literary point of view was little understood by those who entered into the bargain against which we are now protesting. The case, therefore, presents an important object-lesson in the need for organising correct opinion on such subjects. I am glad to inform you that many of us, determined to heed the lesson, have lost no time in creating such an organisation for this city. We have constituted an "Old Bath Preservation Society," membership in which will not be confined to residents in Bath, but be open to all who have at any time lived here or who love the place. The Hon. Secretaries are Mr. T. S. Bush, 20, Camden-crescent, and Miss K. Douglas Fox, 3, Widcombe-terrace, who, with myself as temporary President, will be delighted to receive the names of persons disposed to join our endeavour.

In the particular effort to save Bath-street we must rely now upon the strength of the protest evoked.

S. A. BOYD,
Rector of Bath.

ORIGINALITY AND TRADITION.

SIR,—Will you kindly permit me to point out to Mr. Ricardo that he has failed to appreciate the point of my previous letter? The passages quoted from Mr. Garbett's scholarly work are peculiarly apposite to the subject, and it is difficult to understand how he fails to grasp their manifest application.

Mr. Ricardo tries to prove the falsity of the first of these on the ground that long experience in the practice of architectural design tends to a greater improvement in, and strengthens the vitality of, conception. Now, this is a very disputable but popular belief, and one which there is reason to believe is untenable. Doubtless, to a limited extent, it is true enough, but it appears to me, from actual observation, that the later developments of such (natural) progress are characterised and accompanied by an inherent striving, as it were, to effect a greater individual advancement than is consistent with the governing principles of beauty and fitness—for it must be borne in mind that the greatness of an improvement is not commensurate to the greatness of the change—and a capricious search after novelty (Mr. Ricardo prefers to call it "a perfectly legitimate extension of the area of tradition") ultimately displaces logical and consistent design. This progressive change from self-concealing to self-displaying art is perfectly discernible.

A transitional course of progress, culmination, and decline so necessarily an attribute of the ancient classic and mediæval styles, and the schools of the Renaissance period, is, I believe, equally applicable to the life-work of individual modern artists.

In this respect, therefore, I am entirely in accord with Mr. Garbett, whose treatise I regard as one of the most valuable contributions to the literature of our art.

The second and third quotations embody a great and fundamental truth, and that they also may very properly be associated with the designs of some recent buildings in London most of the thinking will admit. C. D. H.

*** The first of the positions taken by Garbett is, we think, open to question; at all events there have been important exceptions to it. The second and third are, in our opinion, irrefutable. We quite concur in our correspondent's opinion as to the intellectual value of Garbett's treatise—one of the most remarkable contributions to the literature of architecture that has been made in our language.—ED.

REGISTRATION OF ARCHITECTS.

SIR,—Might I be allowed to point out the illogical position of the ruling authorities at the Institute in this matter? First, we are told that architecture is an art, and cannot be controlled and trammelled in ways such as prevail in the professions of law and medicine.

Against this we have a very stiff examination in all branches of the art, for which a prolonged course of study is required and much expense before a candidate can satisfy the examiners that he is entitled to be registered as an Associate. But this registration is of no use, as it does not protect him from the incompetent and unexamined.

If the Institute still continues to examine the younger men it ought to protect them, or if their first attitude is the correct one, it should do away with the examination altogether and elect men on their art merits.

The fools' paradise in which the Institute is living, under the impression that men outside the Institute and in good practice, with perhaps one or two A.R.I.B.A.'s in their office as assistants, are going to rush in shoals to join a third-rate order and to come in under their assistants as "licentiates" without a voice in the management of its councils, is too absurd.

They require no licence to practice now, and it is fatuous to assume that they will join the Institute under these conditions, which would be more a detriment than otherwise, and no self-respecting man would do so.

One of your correspondents on this question has called this licentiate business a clever compromise and skilful diplomacy. To my mind it is neither clever nor skilful, and had there been a diplomatist worth his salt he would have been able to see far enough ahead to have steered the Institute clear of such claptrap, and not made it the laughing-stock of the profession. ELLIS MARSLAND.

THE ARCHITECTURAL ASSOCIATION PLAY.

SIR,—Can you spare me a few lines in your correspondence columns to call attention to the fact that the Architectural Association Play is taking place this year on March 24 and 26?

My reason for writing is that last year so many people remarked that they did not know anything about it, and would most certainly have gone if they had known. We are anxious therefore to bring it before the notice of your readers.

Tickets can be obtained from the undersigned, or at 18, Tufton-street, S.W.

THOMAS W. WATKINS.

PREMISES, BUDGE-ROW.

SIR,—I observe in your issue on the 13th inst. a view of business premises in Budge-row to which is attached the name of Mr. S. Clifford Tee as architect.

As these buildings were erected during 1905 by Messrs. Holloway Brothers from my designs, and under my supervision, I shall be glad if you will publish this correction in your next issue.

I am aware that Mr. Tee prepared designs for buildings on this site, but his designs were never carried out.

The description of the buildings which you publish is in all other respects quite accurate.

JAMES S. GIBSON.

BROOMHALL TILES.

SIR,—In the discussion on Mr. Searles Wood's paper on "Materials," recently read at the Architectural Association, and reported in your columns, I made some remarks in regard to these tiles.

The Broomhall Tile Company have asked me, in justice to them, to rectify the impression I may have conveyed that these tiles are at the present day unsatisfactory. They explain that whereas formerly they made their tiles with only 2½ in. lap, they have now increased this to 3½ in. The failures to which I referred appear to have been due in part to the small lap and in part to unskilful fixing. They now emphasise the importance of themselves fixing their own tiles, and, from recent testimonials they have submitted to me, work carried out by them appears to have given complete satisfaction.

HERBERT A. SATCHELL.

CANTOR LECTURES ON ILLUMINATION.

SIR,—I wish to express my appreciation of your interest in the series of Cantor Lectures recently delivered by me before the Royal Society of Arts.

In the editorial which occurs in the *Builder* for March 13, however, there is one error which might prove misleading. Your reference to "Uviol" glass should be "Euphos"; the "Euphos" glass is a variety which is claimed to be transparent to ordinary rays, but to absorb the ultra-violet ones.

"Uviol" glass, on the other hand, is a glass which is said to absorb nearly all visible rays, but to be exceptionally well able to transmit ultra-violet radiation.

The word "Uviol," which occurs on the twentieth and twenty-fourth lines of your abstract, ought, therefore, to be "Euphos" in each case. LEON GASTER.

Competition News.

MOSAIC PANELS, OLD KENT-ROAD LIBRARY.

The Public Libraries and Museums Committee of Southwark Borough Council invited competitive designs for two mosaic panels at an estimated cost of 100*l.* at the Old Kent-road Library, and offered a premium of 10*l.* for the best design, the assessor to be the architect (Mr. Claude Batley), assisted by another gentleman. Seven sets of designs were sent in, and three were submitted to the Commitee, the assessors being of opinion that the premium should be awarded for the two designs under the motto "Mosaist." The Committee, after inspecting the three panels sent in, accepted the two designs under the motto "Mosaist." The author, Mr. Thomas Adrian Cook, 69, Dacre-road, Upton Manor, Essex, has been instructed to prepare full-size cartoons of his designs with such slight variations as the assessors may suggest, in accordance with the terms of the competition.

THE INSTITUTE OF SANITARY ENGINEERS:

THE STATUS OF THE MODERN SANITARY ENGINEER.

A SESSIONAL meeting of the Institute of Sanitary Engineers was held on Monday, at Nos. 120 and 123, Victoria-street, Westminster, S.W., when Mr. G. W. Chilvers, Vice-President, read a paper entitled "The Status of the Modern Sanitary Engineer."

In the course of his remarks the author said that the Institute of Sanitary Engineers had done much towards obtaining a proper recognition for its own members, and in doing so had at the same time raised the status of the profession generally; but even now its special work and place among other professional bodies was not so clearly indicated as it ought to be. It was usually considered that the modern sanitary engineer began his existence

with the passing of the Public Health Act, 1848, and that a great impetus was given him in his development when the 1875 Act became law. Several inquiries at once presented themselves, such as: What was a sanitary engineer? How did they define him? What was his particular branch of engineering? Was he an engineer at all? To the minds of many, sanitary engineering conveyed little beyond the idea of the removal of excreta and filth from domestic buildings, and was tersely summed up in one word—"drains." Unfortunately this only too accurately described the single qualification possessed by a numerous class who, having been employed to lay the drains at a house, immediately described themselves as "sanitary engineers," and that of others also who, on securing a contract to construct the outfall works at a private residence, at once blossomed forth as "specialists in sewage disposal for country mansions."

Nearly forty years ago Mr. Baldwin Latham, in his standard work on sanitary engineering, defined the sanitary engineer, with reference to his work, in the following words:—"It is the true aim and object of the sanitary engineer to assist Nature in her great but simple operations, to facilitate the purification of the air, to prevent dangerous impurities entering our supplies of water, to supply abundance of these life-giving elements, to remove as speedily as possible, before decomposition commences, all those matters eliminated from the animal system, together with all other decomposing refuse." Those eloquent words comprehended the whole profession of sanitary engineering. It was desirable that the sanitary engineer should take steps to prevent the ordinary house agent degrading the profession by posing before the public as a sanitary engineer. Before being allowed to practise as professional sanitary engineers they should be obliged to pass a qualifying examination, and should then be debarred from doing the practical work in connexion therewith. When they were builders they should not be allowed to do the professional work, but be compelled to prove that they were capable of undertaking the practical work before being allowed to do so, and that they employed fully competent men in each trade concerned in the work. Such a course would raise the status of the profession in the eyes of the public very considerably. The profession of sanitary surveyor was still further degraded in the present day by plumbers and painters undertaking to survey and report on drainage arrangements. The extreme modesty of some of them was manifested by their circulars, in which they asked the small fee of from 5s. per house for doing this. Much had undoubtedly been done in recent years to eliminate the undesirable element from the profession, but much still remained to be done. The public had, to some extent, become educated in the requirements of modern sanitation, and where that was so they required better work. A few years ago the sanitary engineer was looked upon as a kind of "glorified" plumber; he still was so by those who were only acquainted with the counterfeit of him. Thanks, however, to the educating influences which had been at work, the stigma now only applied to those who had not put themselves in the way of knowledge. The Institute of Sanitary Engineers, founded in 1895, had done much in recent years to gain for its members proper recognition, and to raise the profession generally to a higher level of efficiency. It was evident that a great variety of interests were included in the term sanitary engineer at the present day. Broadly, they were divided into two classes—professional and practical—but they now so overlapped each other as to be in many cases indistinguishable unless one had some acquaintance with the qualifications of the party concerned, or knew the kind of business he was engaged in. This was even then somewhat difficult, as they had professional, or consulting, sanitary engineers, sanitary surveyors, consulting and practical sanitary engineers (a mixture of engineer, builder, and plumber), sanitary engineer and surveyor (house and estate agents, etc.), manufacturing sanitary engineers, sanitary specialists, sanitary experts, sanitary engineers (builders, plumbers, shopkeepers, ironmongers, merchants, etc.), and practical sanitary engineers (a mixture of builder, plumber, painter, and decorator). The professional sanitary engineer of to-day had not only to compete with others who were also in practice, but with practical men who also undertook professional work. His sphere in connexion with public works was further restricted at the present time by local authorities who, in many cases now, carried out their undertakings with their own staff. He had also against him those engineers and surveyors to local authorities who, in addition to their official duties, carried on a private practice as well, this last being a most unfair form of competition, as the one had to provide his own office, staff, etc., while the other had them provided for him, and he could also afford to do the work at lower fees on account of the salary he was already getting. One cause of the keen competition in the profession, and which also accounted in a great degree for the various classes found in it, was that at the present time all kinds of men or any firm could style themselves sanitary engineers without any qualification whatever, either in profession or trade. One of the first things done by every little builder, plumber, or painter who started in business for himself was to have an elaborate notice board painted, on which he took care to warn the public, in the most conspicuous manner possible, that he was a sanitary engineer! It was one of the objects of their Institute, and should be made more especially so than it now was, to alter that state of things, and secure by legislation or otherwise that only fully-qualified persons should be allowed to use the title. In Germany it had recently been decided to pass a law to prevent any but qualified persons establishing themselves in, and practising the trade of, a builder. If it was considered desirable in the interests of good work by such a progressive nation to pass a law of that character, how much more important it was in the interests of public health that none but properly qualified men should be allowed to use the title of, and practise as, sanitary engineers. Any man could call himself, and practise as, a sanitary engineer, and without any qualification whatever practise upon the health and lives of his clients by the defective sanitary arrangements he introduced, without any let or hindrance beyond those required by a set of inadequate local by-laws; and it was very questionable if even those were in many cases complied with. Another cause of the overcrowded and unsatisfactory condition of the profession was no doubt the misapplied system of technical education. Their county councils and other educational bodies, by "teaching all things to all men," without discrimination or regard to the profession or trade the student was engaged in, or proposed to be engaged in, were the cause of a mediocrity among their young men which bid fair to leave them behind in the march of modern progress, since the system launched into the different professions and trades totally unqualified men. The result was these were either engaged by the firms requiring cheap labour, or they set up in practice on their own account, with no other qualification than that of a certificate obtained in an elementary examination. If our technical and trade classes were confined to those who were actually engaged, or were to be engaged, in the particular professions or trades to which the classes applied, they would be of far greater benefit to the students themselves, and to the community in general, than they could possibly be under the present system of open classes and consequent indiscriminate education. In their (the members of the Institute) own case, both the profession and the public health suffered through the employment of those incompetent young men, and employers only benefited thereby. No doubt that was also the cause of much of the unemployment at the present time, not only among sanitary engineers, but other professions and trades as well. The competent man had to give place to inexperience and cheap labour. Sanitary engineering now extended over such a large area, and was so comprehensive in character, that it was almost impossible for any one man, however highly he might be otherwise qualified, to become an expert in all the details comprised in it. The sanitary engineer of the present day was supposed to be an "expert" in designing and carrying out works of public and private sewerage and water supply. He was also required to advise on, design, and supervise the best methods of sewage and refuse disposal. In addition to this, he must be thoroughly acquainted with the best means of carrying out the sanitation of public and domestic buildings, including the relative subjects of heating, lighting, and ventilating them. To be properly qualified for that he must possess a thorough knowledge of practical sanitary science, and be deeply versed in all questions of public health law. And, as side issues, he must have at least a general knowledge of the principles of planning, understanding the formation and upkeep of roads, and be well acquainted with the qualities and defects of the various materials used in all the works above described. Such qualifications could only be obtained by special study, proper training, and long experience. And in that matter—where the public welfare was as deeply concerned as the profession could be—every effort should be made properly to train and qualify those young men who proposed to engage in it before they were allowed to do so. No man should be allowed to sit for an examination in either profession or trade, or in practical sanitary science, nor be granted a certificate in either, unless he was actually engaged in the practice of sanitary engineering, or was articled or apprenticed thereto. It must be apparent that with a body of men with such wide interests, and engaged in such comprehensive work as that of sanitary engineering, there should be some clearly-defined lines upon which they might work together, both for their own interests and for the public good, and that some means should be devised whereby the public may be able to discriminate between the sanitary engineer who designed a sewerage scheme, and he who fitted up a water-closet. It was also important that the Institute should more clearly define its own position among the professions, and secure that its members be classified in some way so that the particular qualification of each in the profession would be indicated. To meet those views it appeared desirable that graded examinations should be instituted, which all who wished to practise as sanitary engineers should be required to pass, and, having passed, certificates should be issued to them which would indicate to all the particular branch or branches in which they had qualified themselves. And no man should be allowed to practise in any other than those shown thereon. If this were done the examinations would become recognised by Governments, local authorities, and others as qualifying for particular appointments, and the public would know who to engage and who were qualified for any special work. There was another matter which affected the status of the profession, and in which there was room for improvement; this was in the sanitation of buildings. There was no question but there still existed a large amount of property (besides that of the working classes) which was in an insanitary condition, and if the same system of sanitary inspection was extended to it as was carried out in some districts under the Public Health Acts, many insanitary arrangements would be revealed which, if they existed in a poorer neighbourhood, would be at once condemned. In urban and rural districts especially houses were built with just sufficient sanitation to comply with the local by-laws. They were built for sale. To all outward appearance they conformed to modern sanitary requirements, and to the uninitiated they appeared to be desirable residences. On closer examination, however, the sanitation proved to be mostly outside show. Intending purchasers or tenants were told that the builder was also a sanitary engineer, and that the drains, etc., had been passed by the local authority, therefore everything was satisfactory. The true state of affairs was not usually revealed until sickness occurred, when the professional sanitary engineer was called in and the sanitary arrangements were shown to be altogether defective. This pointed to the inadequacy of the present by-laws. The unsatisfactory state of those in different districts frequently proved a great hindrance to the professional sanitary engineer in his work. He found it very difficult to persuade his clients that anything beyond what was required by the by-laws was necessary for the proper sanitation of his house. Increased powers were necessary under the Public Health Acts, since the present by-laws were insufficient to prevent bad work. No doubt public health legislation would become more advanced in time, and sanitary engineers should work for that desirable end. In doing so they should endeavour to obtain that the sanitation of buildings should then be placed under the control of officers, who should be properly qualified sanitary engineers. A systematic and periodical survey of every building could then be instituted, and if the premises were found in a proper sanitary condition and complying with the by-laws, the cost of such survey should be paid for out of the public funds. If not, those responsible should be compelled, not only to do what was necessary, but also to pay all costs of survey and other charges incidental thereto, and in addition be mulcted in a fine in proportion to the rateable value of the premises. Up to the present sanitary engineers had not taken the active part they should have done in public health legislation (not collectively, at least). It was quite time that such an important body of men did so, because there was no other profession which covered such wide interests, and which at the same time had, or should have, one common end in view—the improvement of the sanitary condition of the community.

A discussion followed, and a hearty vote of thanks was accorded to the lecturer.

METROPOLITAN ASYLUMS BOARD.

AT the fortnightly sitting of the Metropolitan Asylums Board on Saturday last week the following matters were dealt with:—

Caterham Asylum.—Authority was given for the employment of labour and the purchase of materials for the execution, at an estimated cost of 521*l.* 10s., of the cleaning, painting, and repairing work required at the above asylum under the supervision of the Asylum foreman of works.

North-Western Hospital.—A report was presented with reference to the boiler foundations

at the above hospital. The Engineer-in-Chief stated that owing to the concrete raft having lost its weight-sustaining properties, a serious subsidence of the flues and settings of No. 1 boiler was taking place, and as a consequence Messrs. Windsor & Co., who recently dealt successfully with the Tooting Bec Asylum boiler foundations, were called in and opened up trial holes. They found the existing concrete raft was only 6 in. thick. It was agreed that new concrete foundations be provided for the three boilers at the institution, although the Engineer reported that at present it was impossible to give an approximate estimate of the cost.

North-Eastern Hospital.—The Finance Committee reported that the estimate for the installation of electric lighting at the North-Eastern Hospital was 5,460*l.*

ELECTRICAL INSTALLATION AT MESSRS. SELFRIDGE'S PREMISES.

SOME particulars in regard to the electric lighting of this large establishment may be of interest.

For the general lighting of the principal departments 286 Westinghouse enclosed type arc lamps are used. The lamps are hung from the ceiling by chains, in which the electric conductors are concealed, at a sufficient height to give brilliant illumination, while being well above the ordinary line of vision. In addition to the arc lamps there are about 6,000 incandescent lamps, mostly of the new metallic filament type. These are generally carried by ornate fixtures in various styles to suit the particular scheme of decoration adopted in different parts of the building.

Electric lamps are also extensively used for lighting the glass showcases in which goods are displayed. The lamps are fitted in special trough reflectors, which conceal them from view and direct the light on to the merchandise.

One of the most important features of the installation is the method of illuminating the large shop windows. These, wherever possible, are lit entirely by concealed incandescent electric lamps, fixed in special adjustable mirror reflectors along the top of the window, by which the articles on show are brilliantly illuminated, while the eyes of those who are inspecting them are shielded from all glare.

In the installation of the electric wires solid-drawn, heavy-gauge, screwed-steel tubes are everywhere used for protecting the conductors from mechanical injury, these being placed in position during the construction of the floors, and entirely buried in concrete, special precautions being taken to protect them from corrosion. The lights are controlled from switch and fuse distribution boards in iron cases, concealed from view, but easily accessible, additional local switches being fixed where needed.

Current is obtained from the continuous current mains of the St. Marylebone Borough Council, at a pressure of 480 volts, by means of four independent feeders and seven service cables, so that the risk of interruption of the lighting and power service is reduced to a minimum.

The building is equipped with nine Otis electric passenger lifts, designed to travel at a speed of 175 ft. per minute, and capable of each carrying fifteen persons. In addition there are two goods lifts of 5,500-lb. capacity each, and running at 150 ft. per minute. Each lift is operated by a special controller inside the car, and provision is made to enable the lift to be run at the maximum or slower speed. Signals are fitted on each landing to indicate the approach of any lift in either direction.

There are also numerous electric motors installed for a variety of purposes, such as pumping, ventilating, air compressing, pattern cutting, ice breaking, knife cleaning, hair drying, etc.

Electric clocks, worked on the Synchronome system, are used throughout the building, the equipment consisting of one master clock operating nineteen dials, by means of half-minute impulses. The master clock is synchronised electrically with Greenwich mean time every hour. In conjunction with the clock system a special signalling apparatus is used for ringing bells at fixed hours each day to indicate to the staff the times of beginning and leaving off work.

The foregoing incomplete description will afford some idea of the extent and variety of purposes to which electricity is brought into use in a modern business establishment.

Among the contractors who have supplied materials for the electrical installation are the following:—Lifts, the Otis Elevator Company, Ltd.; arc lamps, British Westinghouse Company, Ltd.; fittings, Veritys, Ltd., Spital & Clark, General Electric Company, Ltd.; telephone installation, National Telephone Company, Ltd.; clocks, Synchronome Company; main switchboard, Johnson & Phillips, Ltd.; switch and fuse boards, J. H. Tucker & Co., Ltd.; ventilation work, Ashwell & Nesbit; Grinnell sprinklers, Mather & Platt, Ltd.

The consulting engineers for the electrical installation were Messrs. Wallis-Jones & Dent, of London, and the principal contractors Messrs. Malcolm & Allan, of Glasgow.

THE NAVE OF WESTMINSTER ABBEY.

AT an ordinary meeting of the British Academy, held on Wednesday, a paper by the Rev. R. B. Rackham was read on "The Building of the Nave of Westminster."

The paper was based on investigations of the Westminster Fabric Rolls, and stated that the nave of Westminster was 150 years in building. The money for it came from certain of the revenues of the monastery which were assigned to the *Novum opus*, and were administered by a warden who was responsible for the building. These revenues came from Longdon, in Worcestershire, some houses in King-street and Tothill-street Westminster, from the manors of Hyde and Paddington, and, later, from lands in Westbourne and Kensington. But further help was needed, and it is historically interesting to trace the share in the work taken by kings and abbots. Its origin was due to Cardinal Simon Langham, who had been abbot of Westminster; and fortified by his pecuniary help Nicholas Litlyngton laid the first stone of the new nave on March 3, 1376. Richard II. helped the work in the last ten years of his reign, when the marble pillars were set up. Under Henry IV. the work ceased altogether. Henry V. atoned for this by making himself responsible for it. He gave 1,000 marks a year, and one of his commissioners was the famous "Dick" Whityngton. In his reign the triforium was completed, the side aisles rooted, and the clearstory walls well advanced. Unfortunately Henry V. died after nine years, and Henry VI. did nothing for the Abbey.

The work languished until 1467, when Abbot George Norwych was deposed by a revolution in the convent, and next year Thomas Millyng took up the work with renewed vigour. He roofed one bay, and his work was carried on to its completion by the abbots who succeeded him, and who appointed themselves wardens. Millyng became abbot in 1469, and when Edward IV.'s Queen fled to Westminster to take sanctuary in 1470, Millyng received her hospitably, and stood godfather to the young prince, Edward V., who was born in his house. Consequently after Edward IV.'s return he with the Queen and Prince gave gifts to the work, amounting in all to 580*l.*; and soon after Millyng was made Bishop of Hereford (1474). John Esteney, who had been warden since 1471, succeeded him as abbot, and in his long wardenship of twenty-six years he roofed the nave, vaulted five bays of the nave and the side aisles, and finished the great west window. In fact, Esteney practically completed the fabric, and of all the builders (except perhaps Henry V.) most deserves our gratitude.

His successor, George Fasset (1498-1500), gave 600*l.* to the work, which was finished by the last great abbot, John Islip (1500-1532). He finished off what Esteney had left undone in the vaulting, and at the western gable end. Then he glazed the windows in 1507-10, paved the floor (1510-17), and put up some stone screens under the towers, which have now disappeared. We may date the completion of the work in 1528. Islip enjoyed the confidence of Henry VII., who had done nothing for the abbey in Esteney's time, but after Islip had become abbot began to build the great Lady Chapel which bears his name; and the abbot put Henry's badges upon his new vaulting. Islip also rebuilt the chancel of St. Margaret's, and he was at work upon the western towers when he died in 1532. His death was practically the end of both of the new work and of the convent itself. The last fabric roll dates from 1533-4, and almost the last piece of work was the preparation of the church and sanctuary for the coronation of Queen Anne Boleyn on Whit Sunday, 1533.—*Times.*

PROJECTED NEW BUILDINGS IN THE PROVINCES.

ABERHAFEST.—School. Mr. G. A. Hutchins, architect, Montgomery.

Abingdon.—Railway-station, Great Western Railway. Great Western Railway Engineer, Paddington; Messrs. Hunt & Son, builders, High Wycombe.

Barnes.—Four houses, Nassau-road, Messrs. Charles Ellis & Co., builders, East Sheen; twenty-four houses, Clavering-avenue, for Messrs. Gruntwag & Morton, Clavering-avenue, Barnes; extensions to Mortlake Brewery Stores, for Messrs. Watney, Coombe, Reid, & Co., Ltd.

Berkhamsted.—Post-office. Mr. C. H. Row, architect, 185, High-street, Berkhamsted, Herts.

Birkenhead. — Dwelling-houses. Mr. C. Brownridge, Corporation Surveyor.

Blackburn.—School, Bangor-street (11,000*l.*). Messrs. Cooper & Slater, architects, Richmond-street, Blackburn.

Blackpool.—Police-station. Mr. J. S. Brodie, Town Hall, Blackpool.

Bognor.—Conveniences and lavatories, West-street, and on pier. Mr. A. Bridges, architect, Bognor.

Bridlington.—Additions to Girls' High School. Mr. E. R. Matthews, architect, Bridlington.

Burnham-on-Crouch.—Mission church (910*l.*). Mr. H. W. Ridsdale.

Burnley.—Chapel, house, and offices at cemetery. Mr. J. H. Pickles, architect, Burnley.

Carshalton.—New roads and sewers, Welhurst Estate, Carshalton-road. Mr. F. J. Burstow, architect, 61, High-street, Sutton, Surrey. The following plans have been passed by the Town Council:—Nineteen houses, Stanley-road, Mr. A. B. Cook; eight houses, Cowper-avenue, Messrs. Faulkner; seven houses, Stanley Park-road, Mr. W. King.

Cheadle.—New station building for North Staffs Railway. Mr. C. Dawson, engineer, Stoke; Messrs. Ball & Robinson, builders, Stoke.

Colne.—Chapel and school (3,000*l.*). Mr. S. B. Bower, architect, Keighley-road, Colne.

Colwyn Bay. — Refuse destructor and slaughter-house. Mr. W. Jones, Borough Engineer, Colwyn Bay.

Cork.—Church, Mogeely. Mr. S. Hynes, architect, South Mall, Cork.

Coventry.—Municipal lodging-house. Mr. J. Swindlehurst, St. Mary's Hall, Coventry.

Crook.—Refuse destructor. Mr. E. Ayton, engineer, Crook.

Croydon.—Skating-rink, Brickwood Estate, Addiscombe. Mr. C. P. Crawford and Mr. F. A. Wilkins, Liverpool.

Cwmwhinton, Cotehill. — Mission church (500*l.*). Rev. R. Bott, Cotehill (Carlisle Diocese).

Darlington.—Rebuilding station for North-Eastern Railway. Mr. Bell, architect, York; Messrs. Blackett & Co., builders, Darlington.

Doncaster. Racecourse stand (5,000*l.*). Mr. F. Kirby, Architect, Borough Offices, Doncaster.

Dorchester.—Stables and depôt. Mr. P. Harrison, architect, Dorchester.

Dundee.—Central reading-room (11,000*l.*). City Engineer, City Estate Office, Dundee.

Durham.—New block, Technical College. Messrs. Oliver, Leeson, & Wood, architects, Newcastle-on-Tyne; Messrs. Gradson & Co., builders, Durham.

Ealing.—Dispensary block, Mattock-lane, in connexion with the new Ealing Hospital; clergy house of St. Saviour's, The Grove, Ealing.

East Ham.—Tramway office, Mr. A. H. Campbell, Engineer, East Ham Town Council; ladies' conveniences, Plashet Park, also refreshment-room, shelter, and ladies' convenience, Central Park, men's convenience, New Beckton Park, Mr. A. H. Campbell, Engineer, East Ham Town Council.

Fenton (Staffs). — School, Manor-street (3,000*l.*). Mr. S. Ashworth, architect, Stoke; Messrs. Ball and Robinson, builders, Stoke.

Folkestone.—Wine cellars, rear of 104 and 108, Sandgate-road. Mr. C. Jenner, builder, 49, Broadmead-road, Folkestone. The following plans have been passed by the Town Council:—House, Trimworth-road, Mr. S. Vant; road, Stuart-road, Mr. W. Smith; four houses, Dover-road, Mr. F. E. Maycock; four houses, Dover-road, Mr. W. Smith; two houses, Dover-road, Mr. S. Binfield.

Grays (Essex).—Additions, workhouse. Mr. C. Shiner, architect, Grays, Essex.

Hambledon.—School (4,800*l.*). Mr. H. Littler, architect, Ribblesdale-place, Preston.

Hamilton.—Additions to hospital. Mr. A. Cullen, Motherwell, N.B.

Hampton.—Four houses, St. James-avenue, Messrs. Milestone & Collis, Estate Agents, High-street, Teddington; fourteen houses, Myrtle-road, Messrs. C. Cain & Sons, builders, Waldegrave-road, Teddington.

Hanwell.—Addition to Urban District Council offices. Mr. S. W. Barnes, Surveyor, Urban District Council.

Haverfordwest. — Working-class dwellings. Mr. W. Bevan, Haverfordwest.

Heavitree.—Additions, hospital. Mr. F. E. Simpson, architect, Heavitree, Exeter.

Helsby.—School (3,000*l.*). Mr. J. Holt, Albert-square, Manchester.

Hemel Hempstead.—School (400 places). Surveyor, Hemel Hempstead Rural District Council.

Hereford.—Extensions, Shire Hall. Mr. R. A. Jack, Architect, Shire Hall, Hereford.

Hetton-le-Hole.—School (4,500*l.*). Mr. W. Rushworth, Architect, Shire Hall, Durham.

Heyes.—Two tenement houses, Silverdale-road, for the X-Chair Factory; four villas, Cromwell-road, for Messrs. Foster & Brookes.

Horsham.—Underground convenience. Mr. R. Renwick, surveyor, Horsham.

Ilford.—Studio and motor-van shed, Roden-street, for Ilfords, Ltd., Ilford; conservatories,

rear 5 to 21, Aden-road, Mr. F. B. Harrison, builder, 66, Balfour-road, Ilford.

Kingussie, N.B.—Extension, Linen Bank. O. Castlenach, Kingussie.

Littleboro.—New baths. Mr. J. H. Wild, Town Hall, Littleboro.

Maesteg. — Co-operative premises. Mr. Evans Jones, architect, Port Talbot; Messrs. Thomas & Co., builders, Tresillian-terrace, Penarth-road, Cardiff.

Manchester.—Bank. Messrs. Woodhouse & Dean, architect, King-street, Manchester.

Mansfield, Woodhouse.—Public offices. Mr. F. Cook, architect, Mansfield.

Motherwell, N.B.—School. Mr. J. Cowie, architect, Wisham-street, Motherwell, N.B.

Nelson.—Post-office. Mr. Ball, architect, Town Hall, Nelson.

New Southgate.—Church. Messrs. Baines & Son, architects, 5, Clement's-inn, W.C.

Paignton.—Refuse destructor, also underground convenience. Mr. C. O. Baines, Paignton.

Preston.—Swimming-baths. Borough Surveyor, Town Hall, Preston.

Richmond.—Drill hall for the Surrey Territorial Force Association. Lieut.-General Sir E. R. Elles, Chairman.

Scarborough.—Refuse destructor and conveniences. Mr. H. W. Smith, architect, Town Hall, Scarborough.

Skipton.—Reconstruction of baths. Mr. A. E. W. Aldridge, Skipton.

Southampton.—Additions to Yacht Laundry, Richmond-road, for S. Tabbutt; four houses, Lumsden-avenue, Messrs. Jurd & Saunders, architects, 23, Portland-street, Southampton; stables, coach-house, and mortuary, Ascupart-street, Messrs. Western & Burnett, architects, 24, Portland-street, Southampton; chapel and offices in cemetery, Mr. J. Crowther, Municipal-buildings, Southampton.

Stretford.—Additions, Technical Institute. Mr. E. Worrall, architect, Stretford.

Teddington.—Additions, Munster Lodge, Mr. G. Metcalf; new streets off Kingston-lane, Belgravia Land Company; four houses, Winchendon-road, Mr. G. A. Gale.

Twickenham.—Two houses, Nelson-road, Mr. J. Wills, builder, Kneller-road, Hounslow; workshops, St. Margaret's Works, Winchester-road, Mr. E. J. Partridge, architect, Bank-chambers, Richmond.

Uddingston.—Slaughter-house. Mr. G. Patterson, architect, Hamilton.

Ventnor.—Additions to Town Hall offices. Mr. H. Oakes, Ventnor, Isle of Wight.

Walsall.—The following plans have been passed by the Town Council:—Roller skating-rink, Davwell-street, Mr. J. F. Myatt; re-erection of the Rovers Rest public-house, Bloxwich-road, for the Northampton Brewery Company; re-erection of the Golden Eagle public-house, Green-lane, for the Wolverhampton and Dudley Brewery Company.

Widnes.—Motor garage and workshops. Mr. J. Sinclair, architect, Widnes.

Wrexham. — Additions, baths. Mr. J. Ergland, Wrexham.

Yiewsley.—Public-house (Catherine Wheel), Horton-road. Mr. F. J. Fisher, architect, 14, Queen-street, E.C.

York.—Car-shed and workshop. Mr. F. Spur, Engineer, Guildhall, York.

LONDON AND DISTRICT BOROUGH COUNCILS.

Bethnal Green.—Messrs. Waterlow Brothers & Layton, Ltd., are to lithograph seventy-five copies of the bills of quantities for the new municipal buildings at 3s. 7d. per page, including ordinary marginal sketches.

Camberwell.—The work of channelling the public roads of the borough, which was commenced some twenty years ago, has now been completed. Mr. W. Oxtoby, Borough Engineer, in his report on the matter, says that so far as is known Camberwell is the only borough in the British Isles having the whole of its public streets channelled. The total cost of the work was 26,123*l.* The actual cost of rebuilding the Pitman-street cottages was 1,519*l.* Twenty-two tenders were received for the work, ranging from 1,349*l.* to 2,349*l.* The tender of the Borough Surveyor at 1,500*l.* was accepted, twenty of the tenders being in excess of this amount.

East Ham.—The Engineer, Mr. A. H. Campbell, has been instructed to prepare plans for the following:—(1) Widening and improvement of Station-road; (2) erection of new tramway office; (3) construction of four conveniences; (4) building refreshment-room, shelter, etc., in Central Park. Plans have been passed for (*a*) Messrs. G. & J. W. Fox, fourteen houses in Blenheim-road and Henniker-gardens; (*b*) Mr. A. Wilson, ten houses and one shop, Henniker-gardens; (*c*) Mr. J. Clark, ten houses, Bedford-road.

Fulham.—A small section of Fulham Palace-road is to be lighted with metallic filament lamps attached to the tramway poles as an experiment. If the result is satisfactory, the whole of the road is to be lighted in a similar manner at a cost of 507*l.*

Greenwich.—The contract plan and specification for the stable buildings at the Norman Wharf Depôt are being prepared. It is considered desirable that the existing surface level should be raised to 18 ft. above Ordnance datum, in view of the Thames River Prevention of Floods Act. The cost of the raising is estimated at 300*l.* Mr. J. E. Etheridge, Rollins-street, Old Kent-road, S.E., is to form and pave a portion of Kinveachy-gardens, at a cost of 555*l.* 17s. 6d. Plans have been passed—(1) Mr. Harry Lucas, for the Molassine Company, to build and drain premises on the west side of Blackwall-lane; (2) Mr. A. Roberts, to build and drain four houses on the south side of Straightsmouth.

Hampstead.—The Borough Council at their last meeting received a report from the General Purposes Committee respecting legal proceedings they had taken in regard to an alleged breach of the building by-laws. At the Marylebone Police Court last November Mr. Plowden dismissed two summonses taken out against a builder, on the ground that they should have been taken out against the owner, as the person who ordered the work to be done. The Council appealed to the High Court of Justice, when the Court, consisting of the Lord Chief Justice and Justices Walton and Jelf, upheld the magisterial decision. As it has been the invariable practice of metropolitan borough councils to proceed against the persons who actually carry out the works, and the decision increases the already difficult task of Council officials, as the persons who give the order for the work to be done will now have to be found, opinion of counsel was sought on the judgment of the Divisional Court. As a result the General Purposes Committee suggested that the London County Council should be communicated with with a view to the by-laws being amended so as to make the builder or contractor in actual charge of the works responsible for any breach of the by-laws. They also recommended that copies of the judgment and counsel's opinion thereon be circulated among the various metropolitan councils. This was agreed to. Thirty-six magazine flame arc lamps are to be erected on Haverstock-hill at an estimated cost of 671*l.*

Kensington.—H.M. Office of Works have agreed to allow a public underground convenience to be constructed in Kensington-gardens. An application of Mr. G. A. Lansdown, F.R.I.B.A., of Waterloo-place, S.W., for permission to construct an additional vault beneath the footway of 15, Kensington High-street, has been granted.

Shoreditch.—During the coming financial year eight streets are to be repaved at a cost of 5,815*l.*

Stoke Newington.—Two thousand six hundred and sixty yards super. of the carriageway in Brownswood-road is to be paved with 4-in. creosoted deal blocks at an estimated cost of 1,950*l.*

Tottenham.—The Council have approved the following building notices:—Messrs. Taylor & Kensit, additions to Imperial Cold Storage Company's premises, Portland-road; Mr. T. Willers, sixteen houses, Carew-road; Messrs. Rowley Brothers, twenty houses, Belmont-avenue; Mr. A. E. Broadberry, weight office and stores at Gas Company's offices, Lordship-lane; Mr. T. Rowley, sixteen houses, Keston-road.

Wandsworth.—Messrs. E. Parry & Co. are to pave Woodnook-road, Streatham, for 731*l.*

Obituary.

MR. PAGET.

The death is announced, on March 14, at his residence in West-walk, Leicester, of Mr. Alfred Henry Paget, aged 61 years. Mr. Paget was a son of the late Alfred Paget, J.P., of Leicester. He was elected, in 1870, an Associate, and, in 1892, a Fellow, of the Royal Institute of British Architects, and served as a member of Council. Mr. Paget was a partner of Mr. H. L. Goddard, M.A.Oxon., in the firm of Messrs. Goddard, Paget, & Catlow, formerly Goddard, Paget, & Goddard, of Leicester. Of the more recent architectural works of the firm we may mention the following:—Several houses on the Stanmore Park estate (illustrated in the *Builder* of December 12, 1891, and March 19, 1892); St. James's Church, London-road, built at a cost of 11,000*l.*; and the new reading-rooms, Leicester, 1899-1901: addition of chancel and vestry, etc., with reredos and choir stalls, Christ Church, Mount Sorrel; restoration of the parish church at Thornton, of Thornton, Bagworth, and Stanton-under-Bardon; laying out, at a cost of some 23,000*l.*, of the new cemetery, Leicester (1900); Bedworth branch of the Leicestershire Banking Company (illustrated, January 27, 1900); restoration and choir stalls of Blaby parish church; and alteration and repair, and carved oak stalls, reredos, and other fittings, All Saints, Wigston Magna (1903); and the Free Public Library, Kettering. Mr. Paget was President of the Leicester and Leicestershire Society of Architects, 1892-4.

General Building News.

METHODIST CHURCH, SKEWEN.

A new United Methodist church is in course of erection at Skewen. The architect for the building is Mr. J. C. Rees.

CHURCH RESTORATION, BRADBOURNE, DERBY.

The ancient parish church of Bradbourne has now been reopened after restoration. The scheme was drawn up by Messrs. Naylor & Sale, architects, of Derby, and the structural work was entrusted to Messrs. W. Smith & Son, contractors, of Compton, Ashbourn. The total cost has been 1,200*l.*

SPIRE, OTTERY ST. MARY.

An interesting piece of work has lately been carried out at Ottery St. Mary parish church. The lead spire having been found to be beyond repair, both as regards the structure and covering, has, mainly through the generosity of Lord Coleridge, been totally renewed. The old wood blades have .been superseded by R.S.J.'s; on these were framed wood purlins, rafters, and open horizontal wood slats and felt. The old lead was then recast and relaid with hollow rolls. The woodwork was carried out by Mr. Stuckey, of Ottery St. Mary, the steelwork by Messrs. Measures Brothers, and the lead work by Messrs. Mussellwhite & Sapp, of Basingstoke. The spire is noted for its ancient whistling weathercock, which has been silent for many years, but has now been repaired. The new spire has been carried out under the direction of Mr. J. Duke Coleridge, of London.

WESLEYAN CHURCH, TIDEFORD.

Tideford Wesleyans have opened a new church. The building is of Pinhoe brick, with Portland stone dressings in the lower part and rough-casted above. Its dimensions are 40 ft. by 30 ft., and there is accommodation for 200 worshippers. The total cost of the enterprise is about 1,200*l* Mr. Lawrence Scantlebury, of Callington, was the architect, and the builder was Mr. F. J. Stanbury, of Devonport.

METHODIST CHURCH AND SCHOOL, GATESHEAD.

The Primitive Methodists of Gateshead First Circuit are about to commence the erection of a church and school in Dryden-road. The scheme, by Messrs. Marshall & Tweedy, Newcastle, will involve an outlay of 6,000*l.* The buildings are to be executed in stone from a local quarry, with cathedral glass throughout, pitch-pine fittings, and open-timbered roofs.

SCHOOLS, BISHOP AUCKLAND.

A boys' department has been added to the new Council schools at Cockton Hill, Bishop Auckland, by means of which the accommodation of the schools—1,200 boys, girls, and infants—has been completed. The entire buildings, which are from plans by the County Architect, Mr. Rushworth, have been erected by Mr. Hilton, contractor, of Bishop Auckland, the cost being 13,000*l.*

SCHOOL-CHAPEL, BRADFORD.

The congregation of the Park-lane Wesleyan Reform Chapel, Little Horton, Bradford, are building a new chapel and schools on a site at the junction of Central-avenue and Tivoli-place. The building will be of stone, with bosted ashlar stone dressings, the roof being covered with red tiles. The interior joiner's work is to be of pitch-pine. The contracts have been let at 2,200*l.* to the following firms:—Mr. Joseph Balmforth, Queensbury, mason; Messrs. Toothill & Balmforth, Little Horton, joiners; Mr. R. Flintoff, Bradford, plumber; Messrs. F. & H. Mears, Bradford, heating engineers; Mr. G. W. Callaway, Bradford, plasterer; Mr. G. Wilkinson, Bradford, slater; Mr. W. E. Townson, Bradford, painter; and Mr. H. V. Illingworth, Bradford, seating. Messrs. Walker and Collinson, of Bradford, are the architects.

COUNCIL SCHOOLS, FILEY, YORKS.

New Council schools have been built at Filey. The building is of red brick, with stone dressings, and is covered with Westmorland slates. The classrooms have a dado of glazed bricks, the remaining portion of the walls being covered with plaster. The work has cost approximately 4,000*l.* Messrs. Sawdon Brothers were the contractors, the slating being sublet to Mr. W. Dodgson, Bridlington, and the painting to Mr. H. Durant, Filey. All the other work was carried out by Messrs. Sawdon themselves. The plan of the school was devised

by Mr. B. B. Stamford, of Beverley, the Architect to the East Riding Education Authority.

CHURCH SCHOOL, PENN.

The Church school at Penn, Buckinghamshire, originally erected in 1839, but recently condemned as inadequate by the Board of Education, is to be extended and developed by voluntary enterprise. Plans have been prepared by Mr. C. Harrison Townsend, architect, and approved by the Board of Education and the local authority, showing that the existing Church school can be made to meet requirements through an outlay of about 1,300*l.*

SCHOOL ENLARGEMENT, BANFF.

Mr. Arthur Clyne, architect, Aberdeen, has submitted a report to the Banff School Board with reference to the several building schemes in connexion with proposed school extension. Mr. Clyne had previously submitted schemes, but those were not adopted, and, acting on the Board's instructions, he had prepared two alternative schemes on the basis of an entirely separate higher grade school. The first he estimated to cost 3,700*l.*, and the second 3,900*l.*

FREE LIBRARY, DOWNPATRICK.

A free library, situated in Church-street, Downpatrick, has just been opened. The walls of the new building are built on foundations of concrete, strengthened by steel girders and expanded metal. The heating apparatus installed is Musgrave's small-bore high-pressure system. The architects of the building were Messrs. Blackwood & Jury, Belfast, and the contractors Messrs. M'Dowell, Leathem, & Frazer.

GIRLS' HIGH SCHOOL, MACCLESFIELD.

A high school for girls has been erected by the Cheshire County Council in Fence-avenue, Macclesfield. This building has been erected on a sloping site, and in consequence of this it is of three floors, the ground floor comprising the entrances, cloakroom, etc., while the assembly-hall and principal rooms are on the first floor. Advantage is taken of the rise in the ground on the south side to place the principal entrance on this front at such a level as to lead direct to the upper floor by a short flight of steps, while the pupils' entrance and teachers' entrance are on the lower level, leading direct to the ground floor. The school will provide accommodation for 250 girls in the senior and junior departments, and thirty children in the kindergarten class. The heating is by hot-water low-pressure system, which has been installed by Messrs. Harlow & Sons, of Macclesfield. Ventilation is by means of extract tubes leading to an up-cast shaft leading from the heating apparatus. All the windows are fitted with hopper casements at the sill level, and swivel lights at the top. The sanitary fittings have been supplied by Messrs. Doulton & Co. The lighting is by gas, the fittings have been supplied by Messrs. Baxendale, of Manchester. Electric bells for assembly and for communicating with the various classrooms were supplied and fixed by Messrs. F. J. Jones & Son of Chester. The general contractor is Mr. John Clayton, of Macclesfield. The architect is Mr. H. Beswick, County Architect, Chester, and Mr. Henry Kelly is clerk of the works. The cost of the building, including the laying out of the grounds, fittings, and furniture, has been about 14,500*l.* The gas fittings have been fixed and the plumbing work generally executed by Mr. J. Westwood, whilst Mr. S. Whittaker has carried out the painting.

COUNCIL SCHOOLS, NEWBURY.

The opening has just taken place of new Council schools at Newbury. The premises provide accommodation for 624 scholars. The estimated cost was about 10,000*l.*, and, tenders being invited, that of Messrs. Elms, of Stockcross, for 9,069*l.*, was accepted, this being subsequently reduced by 764*l.* by the elimination of glazed bricks from the specification, and the abandonment of four porches. The whole scheme was designed by the Borough Surveyor, Mr. S. J. Lee Vincent, A.M.Inst.C.E., and the works have been carried out by Messrs. Elms under his supervision. The heating and ventilation were installed by Messrs. Kite & Co.

TRAINING COLLEGE FOR TEACHERS, BINGLEY.

Plans have now been prepared by Mr. J. Vickers-Edwards for a training college for teachers to be erected by the West Riding County Council on the Lady House site, Bingley. The plans provide for a college building, with what is termed a "bath block" a little distance in the rear, and five hostels for the accommodation of the teachers in training. The buildings are to be of stone. Work has already been begun on the laying out of the site.

HEMEL HEMPSTED.

The Hemel Hempsted Town Council have resolved, on the recommendation of their architect, to purchase a site and erect a school for 400 children.

SCHOOL ADDITIONS, OLD DEER, ABERDEEN.

The Old Deer school has been advanced to the position of a higher grade establishment, and this has necessitated the erection of new buildings. The additions have been designed and constructed under the supervision of Messrs. Sutherland & George, Aberdeen, and the contractors were:—Mason, Mr. George Corbett, New Pitsligo; carpenters, Messrs. Edward & Rae, Dyce; plasterers, Messrs. Roger & Baxter, Aberdeen; plumber, Messrs. Blaikie & Sons, Aberdeen; slaters, Messrs. Simpson & Sons, Longside; painters, Messrs. Gordon & Watt, Aberdeen; ironwork, Mr. George Bisset, Aberdeen. The desks were supplied by Messrs. Garvie & Sons, Aberdeen; and the fittings for the chemical laboratory and workshop by Messrs. D. Macandrew & Co., Aberdeen. The playgrounds have been laid out by Mr. John Brown, contractor, Mintlaw.

CHURCH SCHOOL, OVER, CHESHIRE.

At a cost of 4,500*l.*, inclusive of site, a new Church of England day school is being erected to meet the increasing needs of the parish of Over, Cheshire. Accommodation will be provided for some 300 scholars, and the building will be of Ruabon brick up to sill height in front, pebble dashed above, with central window and gable and dormers finished in terra-cotta. The school throughout will be lined with glazed bricks to dado height. The heating will be by hot-water pipes and radiators, and the ventilation by inlets at the back of the radiators and hopper sashes with cross-ventilation throughout by swivel lights. The architects are Messrs. J. & W. Wilding, of Runcorn.

HIGHER GRADE SCHOOL, INVERURIE.

A higher-grade school has been built at Inverurie at a cost of about 5,000*l.* Mr. George Gray, architect, Inverurie, was responsible for the plans of the building.

MISSION HALL, EAST NOTTINGHAM.

A new hall has been built by the East Nottingham Baptists in Robin Hood's Chase. The building has been erected to the design of Mr. W. Beddoe-Rees, of Cardiff, and is capable of accommodating from 250 to 500 people. The cost has been 2,350*l.*, excluding the site.

MISSION HALL, GLOUCESTER.

The foundation-stones of a new mission hall have been laid in Seymour-road. The premises are being erected to the plans of Mr. J. Fletcher Trew, architect, of Gloucester, the builders being Messrs. William Crane, Ltd., contractors, of Nottingham. The total cost is estimated to amount to about 4,000*l.* Mr. John Lake is acting as clerk of works.

NEW SCIENCE BUILDINGS AT HYMERS COLLEGE, HULL.

The opening has now taken place of the new science buildings which have been added to Hymers College at Hull. The extensions join the main building on the north end, and are connected with it on the first floor by a corridor, which is carried over a carriageway in the form of a bridge, and so makes a picturesque incident in the design. Faced with red bricks, with stone dressings to the windows, and roofed with red tiles, the new block is in harmony with the earlier college. The extensions have been designed by Mr. John Bilson, architect. Mr. Mark Harper, of Hull, has been the contractor for the building, his sub-contractors for the different trades being:—Masons, Messrs. Quibell, Son, & Greenwood, Ltd.; carpenter and joiner, Mr. Frederick Singleton; plumber, Mr. W. G. Padgett; tilers, Messrs. J. Hunter & Son; and painter, Mr. J. T. Sawney. Most of the fittings have been executed by Messrs. Illingworth, Ingham, & Co., of Leeds; the heating by Messrs. G. N. Haden & Son, of Manchester; and the electric lighting by Messrs. King & Co., of Hull. Mr. Isaac Graham has acted as clerk of works. The cost of the work has been about 7,000*l.*

DRILL HALL, DUNDEE.

A drill hall is to be erected in Lochee-road for the Artillery and Army Medical Corps of the Dundee Territorials. The plans have been prepared by Mr. Leslie Ower, architect, Dundee, and the work will be proceeded with as soon as possible. The cost will be 3,700*l.*

BATHS, WEASTE.

The foundation-stone has just been laid at Weaste of new baths, situate in Derby-road. Messrs. Mangnall & Littlewood, Manchester, are the architects, they having won the competition for the scheme. The suite of baths contains three large plunge-baths, men's first and second class, and one for women. There is also provided a large number of slipper-baths, nine first-class men's, three first-class women's, twelve second-class men's, and six second-class women's, with the necessary waiting-rooms attached. Vapour baths will be provided in the first-class parts. The elevations are Renaissance in style, and will be faced with buff terra-cotta and red Accrington bricks. The estimated cost of the complete scheme is about 24,000*l.* Messrs. J. Gerrard & Sons, Ltd., Swinton, are the contractors for the main contract. The Tram Construction Company are to be responsible for the reinforced concrete work; Messrs. G. Wooliscroft & Son, Ltd., for the tiling; Messrs. Morrison, Ingram, & Co., Ltd., for sanitary fittings; Messrs. Davies Brothers for asphalting; Messrs. E. Heaton and Son for boilers; Messrs. R. Walker & Son for wrought-iron railing; Messrs. Newton, Chambers, & Co., for cast-iron tank; Messrs. E. Wood & Co., Ltd., for steel work; Messrs. T. Bradford & Co. for laundry machinery; Messrs. Bertram Thomas, Manchester, for electric lighting; Mr. T. Matthews, air lift pump; the Leeds Fireclay Company for terra-cotta; and the Standard Patent Glazing Company for patent glazing. Mr. Temple is the clerk of works.

BRANCH LIBRARY, BELFAST.

A new branch library (the third to be erected in Belfast) has been opened in Donegall-road. For its erection the tender of Messrs. Robert Corry, Ltd., amounting to 4,930*l.*, was accepted. The plans for the building were prepared by Messrs. Graeme-Watt & Tulloch.

WEASENHAM HALL.

The erection of Weasenham Hall has recently been completed from plans prepared by Mr. C. Smedley Beck, architect, Norwich. It is built on the site of the old hall, which had to be taken down owing to its dilapidated state. The work is carried out entirely of red brick with moulded brick strings.

CONVENT, REGENT'S PARK, N.W.

Messrs. Romaine-Walker & Besant, 6, Old Bond-street, W., are the architects for a convent to be erected in the vicinity of Regent's Park, N.W

NEW WEST-END HOTEL.

An hotel is to be erected over the Lancaster-gate tube station. Mr. Delissa Joseph, 73, Basinghall-street, E.C., is the architect.

TRADE NOTES.

MESSRS. PATMAN & FOTHERINGHAM have obtained the contract for some extensive alterations at the Shaftesbury Theatre, under Mr. Frank A. Tugwell, architect, of Scarborough. The theatre was originally built by them.

The Time Recording Company have just received an order for sixteen of their automatic time recorders from the Italian Government.

Messrs. J. B. Joyce & Co., Whitchurch, Salop, have received instructions to make a large clock, striking the hours and showing time upon two dials, for Apley Park, Bridgnorth. The same firm are making a striking clock for Deeping St. Nicholas Church, Spalding, and another, striking hours and quarters, and showing time upon two dials, for St. Andrew's Church, Droitwich.

A large chiming clock with three dials is to be erected on Rangemore Church tower as a memorial to the late Lord Burton by the inhabitants of Rangemore and neighbourhood. The work has been placed in the hands of Messrs. John Smith & Sons, Midland Clock Works, Derby, who made the Burton-on-Trent Town Hall clock for the late Lord Burton twenty-eight years ago.

Sanitary and Engineering News.

SEWAGE PURIFICATION "EXPERTS."

A circular, entitled "Sewage Purification and Utilisation, and Destruction of Pathogenic Organisms," has been sent to us for the benefit of our readers. It is impossible to discover from the circular what are the special features of the system, but the author is prepared to read a paper on the subject, "with special reference to his own patents," before the Sewage Committee of interested corporations: "Terms may be obtained on application." The system, it is said, "involves the principles of fermentation, oxidation, nitrification, and ozonisation," and the careless reader might infer from one sentence and from the title that it would prove profitable to corporations adopting it. Estimating the value of sewage at 10s. per person per annum, the author calculates that it will yield "to the British Isles a sum approximating to 20,000,000*l.* a year," but we gather that the gain is to be national, not civic, for the sewage is to be broken up into "harmless gases, evaporated into the invisible atmosphere, and washed down by the rains from heaven on to every square yard of land." This appears to be the author's novel method of sewage utilisation. Carbonic acid and nitrates are said to be "the two chief factors in the production of food," and it is "into these harmless gases" that the sewage is to be broken up. That nitrates are gases is

an interesting piece of information, but if his words will bear any other interpretation, it can only be that cellulose, sugar, starch, and gluten are gases. Not a word is said about the destruction of pathogenic organisms.

PROPOSED NEW BRIDGE OVER THE MERSEY.

The proposal to erect a new bridge over the Mersey at Bridge Foot was recently considered by the Bridges Sub-Committee of the Warrington Town Council, and it was unanimously decided to recommend to the Council that a ferro-concrete bridge be built, and that tenders be advertised for for a structure 70 ft. or 80 ft. wide. The Committee have also decided to reintroduce the question of the foot-bridge at Howley.

PROPOSED NEW BRIDGE, NEWPORT.

Mr. E. Cruttwell, M.Inst.C.E., M.I.Mech.E., of the firm of Sir John Wolfe Barry & Partners, has prepared a report on the condition of Newport Bridge. The question has been under the consideration of the Corporation for some time, and Mr. R. H. Haynes, the Borough Engineer, who was joint engineer with Mr. Aruodin, in the construction of the Transporter Bridge, prepared a report dealing with the present condition of the town bridge, and recommended a new bridge on the site of the existing one, with a temporary bridge between the present bridge and the Great Western Railway bridge. He submitted cost estimates of four bridges, varying from 116,000*l.* for a stone structure on a site northward of the existing bridge, to 56,000*l.* for one of armoured concrete on the present site. The Corporation subsequently decided to commission Mr. Cruttwell to report on the subject. In this report Mr. Cruttwell states that he considers that it would be wise to renew the bridge without delay, especially in view of the generally recognised opinion that its width is insufficient and that the steep gradients next to Clarence-place are in need of improvement. He concurs with the Borough Engineer's opinion that the existing structure could not be safely widened, and that the cost of widening it would be more than the cost of an entirely new bridge. Mr. Cruttwell suggests that if a new bridge be decided upon the width between the parapets should be increased from 50 ft. to at least 53 ft., so as to provide for a 35-ft. roadway and a 9-ft. roadway on either side. He considers that a central arch, with a smaller arch on each side of it and with two river piers would be preferable to four arches with three piers, because a central arch presents a better architectural effect than a central pier, and more headway beneath the bridge could be obtained by carrying the gradient right up to the crown of the central arch. As regards the cost there is little to choose between the two systems, the three arches if built in granite costing rather more than the four, while if built in steel or in ferro-concrete the relative positions would be reversed, and the three arches would be a little less costly than the four.

WATER SUPPLY, MONTROSE.

The Montrose Town Council have resolved to erect an additional storage reservoir and filtration plant for the burgh water supply. The work agreed upon is part of the scheme, involving an expenditure of over 10,000*l.*, prepared by Mr. Bennett, C.E., Edinburgh.

SEWAGE WORKS, CRIEFF.

New sewage purification works for the burgh of Crieff have just been opened. The works are, it is stated, to a large extent modelled on the system which has been successful in Birmingham, with considerable modifications, to suit the special circumstances. The total cost (apart from land, wayleaves, and legal expenses) has been about 13,000*l.* Of this sum, the intercepting sewers, siphon, lift, and other equipment accounted for between 7,000*l.* and 8,000*l.*, leaving over 5,000*l.* for the purification works. The engineer was Mr. Gilbert Thomson, C.E., Glasgow, and the contractor was Mr. James Kinniburgh, Glasgow.

KIRKCALDY HARBOUR.

The final cost of the construction of Kirkcaldy Harbour will probably amount to 141,500*l.*, according to the report of Messrs. Rendel & Robertson, Westminster, to the Harbour and Foreshore Committee of Kirkcaldy Town Council. The engineers state they are not able to prepare a reliable estimate, because they cannot say what would be the extra cost of the dock walls consequent on the ground having turned out much worse than they had reason to expect. The extras have turned out more serious than anticipated, amounting to the complete walling of the north and south sides of the dock from top to bottom, instead of building the wall at various levels above the dock bottom and completing the under part by underpinning. On the north side the case was complicated by the various strata encountered sloping towards the dock, and by the rock being so loose in bed and joint that it was not safe to found upon. The engineers add that the sands outside the foot of the east pier extension appear to be gradually lowering, and, should this continue, it is quite possible the footing round the end of the extension will have to be carried upwards for its whole length.

COWDENBEATH'S WATER SUPPLY.

In his report regarding the augmentation of the water supply for Cowdenbeath district Mr. Baxter, C.E., Dundee, goes exhaustively into the various schemes, and favours that for drawing the water from Drumnagoil Burn as being the cheapest and most satisfactory. He estimates that 22,100*l.* would cover the total cost of the scheme.

SEWERAGE SCHEME, CAMBERLEY.

Mr. P. M. Crosthwaite, M.Inst.C.E., Local Government Board Inspector, recently held a public inquiry concerning the application of the Urban District Council to borrow the further sum of 10,000*l.* for works of sewerage and sewage disposal. Mr. F. T. S. Marsh, Clerk to the Council, said the sum of 10,000*l.* was the amount estimated by the engineers to be necessary to complete the sewerage scheme, for which loans of 36,878*l.* and 1,000*l.* had already been sanctioned by the Board. Mr. Raikes, of Messrs. Willcox & Raikes, explained the technical points in the scheme.

Miscellaneous.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.

It will be seen by an advertisement that the old partnership between Messrs. Lavers & Westlake, artists in stained glass, will be dissolved as from March 25, and Mr. Westlake will for the future design only his own commissions.

CAMBRIDGE UNIVERSITY.

In their report upon the relations between the Museum of Classical Archæology and the Fitzwilliam Museum, the Syndicate of the latter express an opinion that the Museum of Classical Archæology should be separated from the Fitzwilliam Museum and be committed to the University Museums and Lecture Rooms Syndicate. The Syndicate state that up to the close of last year more than 30,000*l.* has been expended upon the reorganisation, with additions and upkeep, of the museum of casts, with the result that they have been unable to maintain the building fund for an extension of their museum, and are compelled to suspend for a while the purchase of works of art. For a systematical study of Greek art the University devoted 2,350*l.* to the purchase of casts twenty-five years ago, when the collection, which now needs skilled cleaning, was the completest in this country. The Syndicate point out that archæology has become an essential branch of classical learning, and that the Museum of Classical Archæology is used almost entirely for purposes of University study and teaching, mainly by way of lectures and demonstrations.

OPEN SPACES AND RECREATION-GROUNDS.

By the gift of Mr. G. A. Wills to a joint trust of nominees on behalf of the nation the Leigh Woods, on the Somerset side of the gorge of the Avon, are to be preserved in all their sylvan beauty as a place of resort. In 1865 was formed the Leigh Woods Estate Company for the purchase of the property, extending over nearly 170 acres, and the development of much of the land for building purposes. Mr. Wills's gift is, we understand, of some 70 acres of the most beautiful portion of the woods, together with the fine example of a prehistorical camp.——The churchyard of St. Mary's parish church, Rotherhithe, about ¾ acre, has been laid out as a recreation-ground and opened to the public. It contains the tomb, erected by the Hon. East India Company, of the young Prince Lee Boo, a native of the Pelew or Palas Islands, who died in Paradise-row on December 29, 1784.——A recreation-ground has been secured by the Southall District Council of Middlesex, and will be opened on May 1.——The Urban District Council for the urban district of the Maldens and Coombe, Surrey, have framed a code of by-laws for the regulation of Malden Green, in pursuance of the Metropolitan Commons Acts of 1866-98 and the Metropolitan Commons Scheme Confirmation Act of last year.——The Conservators of Mitcham Common, Surrey, and the Parish Council have arrived at a settlement of some differences which arose between them, and a scheme is formulated for making various improvements on the common.——The Corporation of Nottingham have set aside for a public park a large portion, including the house and adjoining buildings, of the Bulwell Hall Estate which they recently acquired as a site for gasworks; the park will be one of the largest in the Midland counties.——The Commons and Footpaths Preservation Society have presented a report upon commons, open spaces, and rights of way affected by private Bills in Parliament, and state that interference is contemplated by thirty-one of the projects—a number less than the average—and that 320 acres of land are scheduled. At a meeting of the Society held a few days ago resolutions were passed to oppose the Bill of the North-Eastern Railway, who propose to take in 178 acres of Salt End Pasture on the banks of the Humber at Preston, and to make representations to the London County Council for preserving the trees in the garden when they carry out their project to take a strip, 19 ft. wide, of Tavistock-square for the widening, on the west side, of Woburn-place and Upper Woburn-place.——The Board of Agriculture and Fisheries have made a scheme whereby the preservation, drainage, maintenance, and regulation of Keston Common and Leaves Green will be taken over by Keston Parish Council, Kent.

DUNFERMLINE PALACE RUINS.

In conjunction with the Crown authorities the Carnegie Dunfermline Trust are continuing the operations under their direction at the ruins of Dunfermline Palace. Although the floor of the supposed cloisters has not yet been reached, some interesting discoveries have been made. The entrance to a subterranean passage has been laid bare. The passage evidently takes two courses, one to the south-east and the other to the south-west. The fragment of a wall has also been laid bare at about the same depth from the surface as the passage, viz., 3 ft., and part of the excavation work has cut through what is believed to have been the kitchen midden of the monks connected with the monastery. Should the floor, a fragment of which was brought to light some time ago, prove to be the floor of the cloister, the work will be of an extensive character. It is proposed to open out all the groined arches, in order to give people an indication of the grandeur of the structure. It is not intended to interfere with the burial-ground, but by the opening of certain portions of the masonry below the level of the churchyard possibly bring to light all the masonry which has been buried for ages. As an indication of the importance attached to the work at the ruins, it may be stated that the Carnegie Dunfermline Trust have in their estimates for the year set apart a sum of 3,000*l.* for carrying it on.

FLUXITE.

We have received from the Auto-Controller and Switch Company a sample tin of Fluxite, which, as some of our readers may already know, is a soldering paste for use instead of spirits or resin, suitable for all metals, with the exception of aluminium. One feature rendering this flux specially useful in the building trades is its suitability for jointing lead to lead without solder by the aid of the blowpipe. Another point of interest to plumbers is that by the aid of the paste brass unions and fittings can be tinned without preliminary cleansing or filing. The same kind of assistance is given in zincwork, and, owing to its non-corrosive nature, the flux can be employed with perfect safety on electric wires, cables, and fittings. One very convenient property of this paste is that it can be carried in the pocket or the tool-bag without the risks inseparable from corrosive liquids.

GLASGOW ARCHITECTURAL CRAFTSMAN'S SOCIETY.

On the 12th inst. Professor Charles Gourlay presided at a meeting of the Architectural Craftsman's Society in Glasgow Technical College, when Mr. Thomas M'Crae, Superintendent of Works, the Company of Merchants, Edinburgh, read a paper, entitled "A Portland Stone Building." The building dealt with was the new offices of the Edinburgh Life Assurance Company, George-street, Edinburgh, recently completed. Mr. Dick Peddie was the architect, and Mr. M'Crae was himself employed as clerk of works. The use of Portland stone in Edinburgh being somewhat novel, the lecturer spoke of his experiences regarding the material. He detailed his visit to the Isle of Portland, and dealt with the methods of quarrying and the different kinds of stone. He called attention to the beauty of the stone after it had stood the test of the weather, and pointed to the old buildings of London as examples. Excellent specimens of the several kinds of Portland stone were shown.

PAINT FOR DAMP WALLS.

We have received a sample of a white paint called "Anti-dampine" from Messrs. Jenson & Nicholson, of Stratford, London. This is a white enamel paint which can be applied to damp brick, plaster, or cement walls. It leaves a glossy surface which is impervious to water and which can readily be washed. It also forms a suitable covering for iron or steel exposed in damp situations.

MISCELLANEOUS—*Continued on page 358.*

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, —; Contracts, iv. vi. viii. x.; Public Appointments, xiv.; Auction Sales, xxiv.

Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.

Competitions.

MARCH 24.—**Eastleigh.**—HALL.—The London and South-Western Railway Company invite competitive designs for the construction of a hall to be erected adjoining the Railway Institute Building at Eastleigh, near Southampton. A plan of the site and conditions of the competition will be forwarded to any competitor upon the deposit of 1*l.* 1s. Secretary, London and South-Western Railway Company, Waterloo Station, London, S.E.

MARCH 31. — **Middlesbrough.** — NEW LIBRARY.—The Free Library Committee invite plans for proposed new Library to be erected in Dunning-road and Grange-road, East Middlesbrough. Premiums of 50*l.*, 30*l.*, and 20*l.* Conditions, with plan of site, may be obtained on application to Mr. Alfred Sockett, Town Clerk, Municipal Buildings, Middlesbrough. Deposit, 2*l.* 2s. For further particulars see advertisement in our issue of December 26.

APRIL 6.—**Chard, Somerset.**—WATER SUPPLY.—A premium of 20*l.* is offered by the T.C. for the most effective and economical scheme for providing the Borough with a sufficient quantity of pure water. Mr. S. G. Rogers, the Borough Surveyor, will meet intending competitors at his office by appointment.

JULY 31. — **Glasgow.** — LAYING-OUT LAND.—The Patrons of the Royal Incorporation of Hutchesons' Hospital in the City of Glasgow invite competitive designs for laying-out for feuing and building their lands of Thornliebank, in the Parish of Eastwood and County of Renfrew, near the City of Glasgow. The terms and conditions of the competition, and, upon deposit of 3*l.* 3s., skeleton plans showing the situation and boundaries of the different portions of the lands, may be had from the Chamberlains of the Hospital, Messrs. Hill & Hoggan, 194, Ingram-street, Glasgow, with whom designs must be lodged not later than July 31, 1909. Premiums of 100*l.*, 75*l.*, 50*l.*, and 25*l.* respectively will be awarded.

Contracts.

BUILDING.

MARCH 22. — **Deadwaters.** — WAREHOUSE, ETC.—Erection of a warehouse and shed in Barge-street, Deadwaters, for the Huddersfield Industrial Society, Ltd. Plans may be seen, and bills of quantities obtained, at office of Mr. J. Berry, architect, surveyor, and valuer, 3, Market-place, Huddersfield.

MARCH 22.—**Southerndown.**—ALTERATIONS, ETC., TO HOUSE.—Alterations and additions to house and lodge and for forming new drive at Craig-yr-Eos, near Southerndown, for Mr. W. Cope. Plans can be seen, and bills of quantities obtained, at offices of Messrs. Cook & Edwards, MM.S.A., architects, Bridgend, on payment of 1*l.* 1s. deposit.

MARCH 23.—**Aberdeen.**—ROYAL INFIRMARY ADDITIONS.—Tenders are wanted by the Corporation of the Royal Infirmary, Aberdeen, for executing the mason, carpenter, glazier, plumber, plasterer, asphalter, and smith and iron works of new operating theatres, etc. Plans, etc., may be seen with, and specifications, etc., obtained from, Messrs. Kelly & Nicol, architects, 367, Union-street, Aberdeen.

MARCH 23.—**Armagh.**—ERECTION OF OFFICES.—The C.C. of Armagh invite tenders for the building of additional offices in connexion with the County Courthouse, in accordance with plans, etc., prepared by the County Surveyor. Forms of tender may be obtained, and the plans, etc., may be inspected, on application to Mr. Joseph Atkinson, County Secretary, County Court-house, Armagh.

MARCH 23.—**Bedford.**—PAVILION.—Tenders are invited for the construction of a refreshment pavilion at Russell Park, Bedford. Plans, etc., may be seen upon application at the Borough Surveyor's Office, Town Hall.

MARCH 23.—**Bristol.**—CHALET.—The Sanitary and Improvement Committee invite tenders for the erection of a chalet in each of the following parks:—Eastville Park; Victoria Park, Bedminster; Greville Smyth Park; and St. George Park. The drawings, etc., may be seen at the office of the City Engineer, where a copy of the specification may be obtained on deposit of a cheque value 1*l.*

MARCH 23.—**Darlington.**—SCHOOL.—The Corporation of Darlington invite tenders for the erection of a new school, to accommodate 420 children, on the Dodmire Estate, Eastbourne, Darlington. Plans, etc., may be seen, and bills of quantities, etc., obtained, at the offices of Mr. George Winter, Borough Surveyor, Town Hall, Darlington, on depositing a cheque for 2*l.* 2s.

MARCH 23. — **Golcar.** — HOUSES.—Various trades (except plasterers and painters) required in the erection of two dwelling-houses in Scar-lane, Golcar. Plans may be seen, and quantities obtained, at office of Mr. Arthur Shaw, architect, Golcar.

MARCH 23.—**Terrington St. Clement.**—REPAIRS, ETC., TO HALL.—Improvements and repairs to the hall of the Manchester Unity of Oddfellows, Terrington St. Clement. Specification, etc., may be obtained at offices of Messrs. Walker & Walker, architects and surveyors, Wisbech and Terrington.

MARCH 24. — **Braunton.**—BUILDINGS.—Erection of a house, stabling, and outbuildings at Braunton for Mr. J. Pickard. Plans, etc., can be seen at office of Mr. H. W. Weir, architect and surveyor, Ilfracombe, No. 32, Greenclose-road, Ilfracombe.

MARCH 24.—**Droxford.**—FARMHOUSE.—Erection of a farmhouse and stabling for Mr. J. E. Cooper Dean, at Wallops Wood Farm, near Droxford. Plans, etc., may be seen at the offices of Mr. F. J. Blundell, land agent, Botley.

* MARCH 24. — **Kingswinford.** — SCHOOL. — The Staffs Education Committee invite tenders for a new Council School at Brockmoor, in the Parish of Kingswinford, South Staffs, and also for enlargement, etc., of existing Brockmoor Council School. See advertisement in this issue for further particulars.

MARCH 24.—**Lindley.**—VILLA.—Erection of a detached villa in New Hey-road, Lindley. Plans may be seen, and bills of quantities obtained, at offices of Messrs. J. B. Abbey & Son, architects and surveyors, 34a, New-street, Huddersfield.

MARCH 25. — **Lytham.** — FOUNDATION. — Lytham U.D.C. invite tenders for the (*a*) construction of foundation and floor for a new bandstand to be erected in Lowther Gardens; (*b*) painting of the bandstand after erection; and (*c*) construction of an enclosure to same. Plans may be seen, and specifications, etc., obtained, at the office of the Surveyor to the Council.

MARCH 25.—**Mereworth.**—COAL SHED, ETC.—Kent Education Committee invite tenders for the execution of sanitary improvements and erection of a coal shed, Mereworth Council School. Specifications can be seen, and further information obtained, of the Correspondent, Miss K. Morton, West Pavilion, Mereworth Castle, Maidstone.

MARCH 26.—**Aberthin.**—HOUSE.—Erection and completion of a dwelling-house, etc., at Aberthin. Plans, etc., may be obtained by appointment from the architect, Mr. Robert Llewellyn Evans, architect and surveyor, Penllyn-court, Cowbridge.

MARCH 26.—**Ashford.**—AMBULANCE STATION.—Ashford U.D.C., Kent, invite tenders for the formation of the St. John Ambulance Brigade Station, under the Assembly Rooms. Plans, etc., may be seen, form of tender, etc., obtained, on application to Mr. William Terrill, surveyor, at his office, 5, North-street.

* MARCH 26. — **Cardiff.** — COUNTY HALL. — The Glamorgan C.C. invite tenders for foundations and drainage of new County Hall in Cathays Park, Cardiff. See advertisement in this issue for further particulars.

MARCH 26.—**Crowcombe.**—RESIDENCE.—Erection of a detached residence on the Crowcombe Heathfield Estate, adjoining the Crowcombe Railway Station, for Mr. Geo. R. Cover. Drawings, etc., may be seen, and bills of quantities obtained, at the offices of Mr. F. W. Roberts, F.R.I.B.A., architect, 2, Hammet-street, Taunton.

MARCH 26.—**Lightcliffe.**—HOUSE.—Erection of a house at Lightcliffe. Plans, etc., may be seen, and bills of quantities obtained, at offices of Messrs. Joseph F. Walsh & Graham Nicholas, F.R.I.B.A., Museum-chambers, Halifax.

MARCH 26.—**Netherton.**—RESIDENCE.—Erection of a residence in Crescent-road, Netherton, near Huddersfield. Plans may be seen, and bills of quantities obtained, at offices of Messrs. J. B. Abbey & Son, architects and surveyors, 34a, New-street, Huddersfield.

MARCH 27. — **Hopeman.** — COTTAGES.—Mason, carpenter, plumber, slater, plaster, and painter works of two cottages to be erected in Hopeman. The plans, etc., may be seen with Mr. John Wittet, architect, Elgin.

MARCH 27.—**Swineford.**—REMODELLING PREMISES.—Tenders are invited for the remodelling of the premises of Messrs. John P. O'Connor, Swineford, Co. Mayo. Plans, etc., can be seen at the office of Mr. Joseph S. Cairns, C.E., Ballina.

MARCH 29. — **Bingley.** — TRAINING COLLEGE.—The West Riding Education Committee invite whole or separate tenders for the erection of a training college at Bingley. Plans may be seen, and specifications obtained, on application to the West Riding Architect, County Hall, Wakefield. A deposit of 1*l.* must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield.

MARCH 29.—**Cwmgwrach.**—HOUSE.—Erection of a detached house at Cwmgwrach, near Glyn-neath, for Mr. Thomas Jones. Drawings, etc., may be seen at office of Mr. J. Llewellin Smith, M.S.A., architect, Aberdare.

MARCH 29. — **Cwmgwrach.**—HOUSES.—Twenty (or more) semi-detached houses at Cwmgwrach, near Glyn-neath, for the Dunraven Building Club. Drawings, etc., may be seen at office of Mr. J. Llewellin Smith, M.S.A., architect, Aberdare.

MARCH 29. — **Kingstown.** — HABITATIONS. — The U.D.C. invite tenders for the construction of seventy-five habitations to be built at Glasthule. The plans, etc., can be inspected at the Surveyor's Office, Town Hall. One pound will be charged for each bill of quantities.

MARCH 29. — **Newcastle-upon-Tyne.**—SCHOOL. — The Education Committee invite tender for alterations and additions to Westmorland-road Council School. Plans, etc., at the Education Offices, Northumberland-road. A copy of the bills of quantities may be obtained upon a deposit of 2*l.* 2s.

MARCH 29.—**Rosebrae.**—ADDITIONS, ETC., TO FARM BUILDINGS.—Mason, carpenter, plumber, slater, plaster, and painter works of additions and alterations on the farm buildings at Rosebrae. Mr. John Wittet, architect, Elgin.

* MARCH 29.—**St. Marylebone.**—NEW DEPOT.—The St. Marylebone B.C. invite tenders for new stables, workshops, offices, etc., at their depôt site in Grove-road, N.W. See advertisement in this issue for further particulars.

MARCH 29. — **Sittingbourne.** — REPAIRS, ETC.—Sittingbourne and Milton Joint Hospital Board invite tenders for sundry works of repairs, painting, etc., at the Joint Hospital at Keycol-hill, where specifications of the work may be seen.

* MARCH 29. — **Stanford-le-Hope.**—SCHOOLS.—The Essex Education Committee invite tenders for schools at Stanford-le-Hope, Essex. See advertisement in this issue for further particulars.

MARCH 30.—**Dublin.**—SCHOOL.—Tenders are invited for the erection of new National School at Clonard, Co. Meath, according to the Board of Works plans, which can be seen at the Parochial House, Kinnegad, Co. Westmeath. The plans can also be seen at the office of Mr. T. F. McNamara, architect, 50, Dawson-street, Dublin.

* MARCH 31.—**Ashurst Wood.**—SCHOOL.—The East Sussex Education Committee invite tenders for the erection of an elementary school. See advertisement in this issue for further particulars.

MARCH 31.—**Greasborough.**—SCHOOL BUILDINGS.—The West Riding Education Committee invite whole or separate tenders for alterations and erection of new conveniences, Greasborough Infants' Provided School. Plans may be seen, and specifications with quantities obtained, on application to the West Riding Architect, County Hall, Wakefield. A deposit of 1*l.* must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield.

MARCH 31.—**Monmouth.**—COOKERY KITCHEN.—The Managers of Jones's Elementary School, Monmouth, invite tenders for the building of a new cookery kitchen at the school. Plans may be seen, and copies of the bill of quantities, etc., obtained, on application to the architect, Mr. George F. Grimwood, Monmouth, on deposit of the sum of 2*l.* 2s.

MARCH 31.—**Silsden Aire.**—CARETAKER'S HOUSE.—The West Riding Education Committee invite whole or separate tenders for conversion of stable into caretaker's house, Silsden Aire View Provided School. Plans may be seen, and specifications, etc., obtained, on application to the West Riding Architect, County Hall, Wakefield. A deposit of 1*l.* must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield.

APRIL 1. — **Ballsbridge.** — ALTERATIONS TO TOWN HALL.—Pembroke U.D.C. invite tenders for certain alterations at the Town Hall, Ballsbridge. Particulars can be obtained at office of Mr. J. G. Manly, Clerk to the Council, Town Hall, Ballsbridge, Pembroke, Co. Dublin, and specifications and plans inspected.

* APRIL 2. — **Gloucester.** — OFFICES, ETC. — The Gloucestershire C.C. invite tenders for County Offices and alterations to Shire Hall, Gloucester. See advertisement in this issue for further particulars.

APRIL 2.—**Llanelly Clydach.**—COUNCIL SCHOOL.—Breconshire Education Committee invite tenders for the erection of a new infants' school for 100 places, on land adjoining the existing school at Clydach. Plans, etc., may now be seen at office of Mr. Charles W. Best, M.Inst.C.E., Surveyor to the Breconshire Education Committee, at the County Hall, Brecon. Bills of quantities will be forwarded on receipt of a written application, accompanied by a cheque for 2*l.* 2s.

APRIL 3. — **Cloneygowan.** — COTTAGES.—Cloneygowan R.D.C. invite tenders for building eighteen single labourers' cottages, two double labourers' cottages, and for fencing sixteen plots. Plans, etc., can be obtained from the Clerk to the R.D.C. on payment of 5s. Mr. Richard Goodbody, Clerk of the Council, Mountmelick.

APRIL 3. — **Slough.**—ALTERATIONS.—Slough U.D.C. invite tenders for the supply of labour and materials required for the internal alterations to Cedar House, Slough. Plans, etc., may be seen at the office of the Surveyor to the Council, 1, Mackenzie-street, Slough, where forms of tender can be obtained on deposit of 1*l.* 1s.

APRIL 6. — **Hinckley.** — BATHS.—Hinckley U.D.C. invite tenders for the erection of Public Baths at the rear of the Council Offices, Station-road, Hinckley. The drawings, etc., may be inspected at the Council Offices, Hinckley. Copies of the quantities may be obtained upon the payment of 2*l.* 2s.

APRIL 7. — **Edinburgh.** — NEW SLAUGHTERHOUSES, GORGIE.—The Magistrates and Council invite schemes

and estimates for the equipment and complete fitting up of the new slaughterhouses at Gorgie. Apply to the architect, Mr. James A. Williamson, A.R.I.B.A., Public Works Office, City Chambers. A deposit of 5*l.* 5s., by crossed cheque only, will be required for the memorandum and plans.

APRIL 10.—**Nottingham.**—WALL.—The Water Committee invite tenders for the building of a Bulwell stone boundary wall; also for certain structural alterations to cottages in Brewhouse-yard, and to buildings in yard adjoining their Castle Works, Castle Boulevard. Particulars may be obtained on application to Mr. F. W. Davies, Water Engineer, St. Peter's Church-side, Nottingham. Specification, etc., may be obtained at the Engineer's office on payment of a deposit of 1*l.* 1s.

* APRIL 15.—**Bethnal Green.**—MUNICIPAL BUILDINGS.—The Bethnal Green B.C. invite tenders for Municipal Buildings in Cambridge-road, Bethnal Green. See advertisement in this issue for further particulars.

APRIL 16.—**Bexhill.**—CENTRAL PARADE IMPROVEMENT.—The Corporation invite tenders for the construction of a colonnade, shelters, and bandstand. Plans may be seen, and specifications, etc., obtained, upon application to the Borough Surveyor, Mr. George Ball, A.M.Inst.C.E., Town Hall, upon deposit of 5*l.*

NO DATE.—**Arthington, Leeds.**—HOUSE.—House, Arthington district; lease guaranteed. Mr. Dawes, architect, Oxford-row, Leeds.

NO DATE.—**Belfast.**—HOUSES.—The erection and completion of twenty-four dwelling-houses, Locan-street, Belfast. Plans, etc., can be had at the office of Mr. W. J. Moore, architect, 35, Royal-avenue, Belfast.

NO DATE.—**Chipping Norton, Oxfordshire.**—HALL.—Estimates are required for the erection of an Oddfellows' Hall, Chipping Norton, Oxfordshire. Apply to Messrs. Hipkiss & Stephens, architects, 24a, Martineau-street, Birmingham.

NO DATE—**Goole.**—BUILDINGS.—Goole U.D.C. invite tenders for the erection of a building to contain sulphate of ammonia plant at the Gasworks, Goole. Specification, etc., may be obtained on application to Mr. W. A. Burton, Engineer and Manager, Gasworks, Goole.

NO DATE.—**Killinchy.**—MANSE.—New manse at Killinchy, Co. Down. Plans, etc., can be obtained at the offices of the architects, Messrs. Hill & Kennedy, A.R.I.B.A., M.R.S.I., architects and civil engineers, 35, Wellington-place, Belfast, on deposit of 3*l.* 3s.

NO DATE.—**Morley.**—ERECTION OF NEW PAVILION.—For excavators, masons, and bricklayers, iron-founders, joiners, plumbers, plasterers, and painters works, for erection of pavilion at corner of South Queen-street and High-street, Morley, for the New Pavilion Company, Ltd. Names to Mr. Arthur Almond, architect and surveyor, 2, Peel-street, Morley, accompanied by deposit for 1*l.* 1s.

NO DATE.—**North Kessock.**—HOUSE—Offers are required for the erection of a house at North Kessock. Plans, etc., may be had on application to Mr. Alex. F. Mackenzie, architect, Inverness.

NO DATE.—**Sunderland.**—ELECTRIC POWER STATION.—Electric power sub-station. Drawings may be seen, and full particulars obtained, at Bagnall's, South Hylton Forge, near Sunderland.

NO DATE.—**Tantobie and Annfield Plain.**—SHOPS, ETC.—Shops, warehouses, and stable at Tantobie, also for shops at Annfield Plain, for Messrs. Walter Willson, Ltd. Names to Mr. D. M. Spence, architect and surveyor, Shotley Bridge. Quantities will be supplied upon payment of deposit of 10s. 6d. in each case.

ENGINEERING, IRON, AND STEEL.

MARCH 24.—**Newport.**—PONTOONS.—The Newport Harbour Commissioners invite tenders for the removal, repair, and replacing of the three pontoons at Rodney Wharf. Specifications may be obtained from the Harbour Master's Office on payment of 2s. 6d. each

MARCH 25.—**Dundee.**—JETTY.—The Trustees of the Harbour of Dundee invite tenders for the construction in Hennebique's ferro-concrete of a new jetty at Broughton Ferry, about 115 ft. in length. Plans, etc., may be seen or obtained at the office of Mr. J. Hannay Thompson, M.Inst.C.E., Harbour Engineer, Harbour Engineer's Office, Dundee. Deposit of 5*l.* 5s.

MARCH 25.—**Saltburn—Whitby.**—BRIDGES.—North-Eastern Railway Directors invite tenders for the renewal of eight bridges on the Saltburn and Whitby Branch. Plans, etc., may be seen, and detailed quantities and form of tender obtained, on personal application to the office of Mr. W. J. Cudworth, the Company's Engineer at York.

MARCH 26.—**Cardiff.**—PLANT.—Cardiff Corporation invite tenders for:—No. 1.—Supply and erection of switchboard. No. 2.—Supply and erection of steam, exhaust, and circulating water pipework. No. 3.—Supply and laying of cables. Specifications and form of tender may be obtained from Mr. Arthur Ellis, City Electrical Engineer and Manager, Central Offices, The Hayes, Cardiff, on payment of a deposit fee of 1*l.* 1s.

MARCH 26.—**London.**—ELECTRIC LIGHTING.—The Metropolitan Asylums Board invite tenders for the installation of electric lighting at the North-Eastern Fever Hospital, St. Ann's-road, South Tottenham, N., in accordance with drawings, etc., by Mr. W. T. Hatch, M.Inst.C.E., M.Inst.M.E., Engineer-in-Chief, which may be inspected at the office of the Board, Embankment, E.C., and can then be obtained upon payment of a deposit of 5*l.*

MARCH 29.—**Milnwood.**—STEEL AND IRON WORK.—The Directors of the Caledonian Railway Company invite tenders for the works to be executed in the construction of the superstructure of Milnwood Bridge, over the main line near Mossend. Drawings may be seen at the office of the Company's Engineer, Buchanan-street Station, Glasgow, where copies of the specification, etc., may be obtained on payment of 2*l.* 2s.

MARCH 29.—**Salford.**—WIRING—Salford Electricity Committee invite tenders for rewiring at the Royal Technical Institute. Specifications, etc., may be obtained from Mr. V. A. H. M'Cowen, Borough Electrical Engineer, Electricity Works, Frederick-road, Pendleton, upon payment of a deposit of 1*l.* 1s.

MARCH 30.—**London.**—GIRDER BRIDGES.—Bombay, Baroda, and Central India Railway Directors invite tenders for the supply of girder bridges. Forms can be obtained at offices of Mr. C. Crommelin, Secretary, Gloucester House, 2, 3, and 4, Bishopsgate-street Without, London, E.C., on payment of 1*l.* 1s. each, which will not be returned.

MARCH 30.—**New Mills.**—PLANT.—The U.D.C. invite tenders for the supply and erection of a water softening and filtering plant, capacity 6,000 gallons per hour. Also for the erection of a sulphate plant at their Gasworks. Specifications, etc., may be obtained from the Engineer, Mr. P. Lancashire, Gasworks, New Mills.

MARCH 30.—**Stronsay.**—PIER.—The Orkney Harbours Commissioners invite tenders for the construction of a new pier, 470 ft. in length, at Whitehall, Stronsay, Orkney. Plans, etc., from Mr. D. J. Robertson, Clerk, Orkney Harbours Commissioners, Kirkwall.

MARCH 31.—**London.**—CRANES, ETC.—The East Indian Railway Company invite tenders for the supply and delivery of (1) steel palisade fencing; (2) 30-tons steam breakdown cranes and match trucks, as per specifications to be seen at the company's offices. For each specification a fee of 1*l.* 1s. is charged, which cannot under any circumstances be returned. Mr. C. W. Young, Secretary, Nicholas-lane, London, E.C.

APRIL 2.—**Kedington.**—WELL AND PUMP.—The Guardians of the Risbridge Union, in the Counties of Suffolk and Essex, invite tenders for sinking a well, erecting a pump-house, supplying a pump, shafting, etc., at Kedington Workhouse, near Haverhill. Plans, etc., prepared by Mr. G. E. Mitchell, of Ashen-road, Clare, Suffolk, who will supply copies on payment of the cost thereof. The plans, etc., can be seen at the Workhouse at Kedington. Forms must be obtained from office of Mr. S. L. Bigmore, Clerk, 2, Wratting-road, Haverhill, Suffolk.

APRIL 2.—**Sheffield.**—WIDENING OF LADY'S BRIDGE.—The Improvement Committee invite tenders for the works required in the widening of Lady's Bridge, The Wicker, Sheffield. Particulars, etc., may be obtained, and drawings inspected, at the office of the City Engineer, Town Hall, Sheffield, on payment of the sum of 10s.

APRIL 3.—**Arbroath.**—STATION RECONSTRUCTION.—The Dundee and Arbroath Joint Line Committee invite tenders for the works to be executed in the reconstruction of Arbroath Railway Station (two contracts). Drawings may be seen, and a copy of the specification and schedule for either contract obtained, at the office of Mr. James Bell, Engineer, 23, Waterloo-place, Edinburgh, on exhibiting receipts for 3*l.* 3s., to be paid to Mr. Geo. G. Hamilton, Manager and Secretary, 26, East Dock-street, Dundee.

APRIL 10.—**Nottingham.**—SINKING WELL.—The Water Committee invite tenders for sinking a well, etc., on land adjoining their pumping station, Shaftesbury-avenue, Burton Joyce, near Nottingham. Particulars may be obtained on application to Mr. F. W. Davies, Water Engineer, St. Peter's Church Side, Nottingham. Specification, etc., may be obtained at the Engineer's Office on payment of a deposit of 1*l.* 1s.

MAY 31.—**Sydney.**—PLANT.—Messrs. Preece & Cardew are instructed by the Municipal Council of Sydney, New South Wales, to invite tenders for electricity plant. Specification, etc., may be obtained from Messrs. Preece & Cardew, 8, Queen Anne's-gate, Westminster, S.W., on payment of a deposit of 1*l.* 1s.

JUNE 1.—**Egypt.**—RISING MAIN, ETC.—The Ministry of Public Works for the Egyptian Government invite alternative tenders for the construction of rising main in cast iron, steel, and in reinforced concrete. Copies of the condition of tender may be obtained on application from (1) the office of the Controller-General, Main Drainage Department, Ministry of Public Works, Cairo; (2) Sir Douglas Fox and Partners, 56, Moorgate-street, London, E.C.; (3) Lieut.-Col. J. H. Western, C.M.G., R.E., Queen Anne's-chambers, Broadway, Westminster, London, S.W.; (4) the Commercial Intelligence Branch of the Board of Trade, London; where can also be seen copies of the detailed description of the work, together with plans, etc.

* NO DATE.—**Sheffield.**—HEATING.—Tenders are invited for installation of heating apparatus for the Sheffield Royal Infirmary extension. See advertisement in this issue for further particulars.

NO DATE.—**Tewkesbury.**—MECHANICAL SAND FILTERS AND SAND WASHERS.—Tenders are invited for the supply and erection of mechanical sand filters for Severn water at the Waterworks Pumping Station, Tewkesbury. A plan of the works and further particulars may be obtained from Mr. J. S. Pickering, M.Inst.C.E., Borough Water Engineer, Municipal Offices, Cheltenham.

MISCELLANEOUS.

MARCH 22.—**Ayr.**—CARTING.—The C.C. of Ayrshire (Carrick District Committee) invite tenders for carting road metal from the various quarries and stations in the district to the road depôts. Specifications, etc., can be obtained on application to Mr. Robert Moir, C.E., District Surveyor.

MARCH 22.—**Kington.**—HAULING STONE.—Kington R.D.C. invite tenders for hauling stone and other materials for the repair of the roads. Estimates of quantities and particulars may be obtained from the Surveyor, Mr. Francis Exton, Broxwood, Pembridge, who will supply forms of tender.

MARCH 22.—**Sculcoates.**—TEAM LABOUR.—Sculcoates R.D.C. invite tenders for team labour. Forms and particulars may be obtained on application to the Council's Surveyor, Mr. A. Greaves, Woodbine Villa, Hessle.

MARCH 22.—**Sedgefield.**—LEADING OF ROAD MATERIALS.—The R.D.C. invite tenders for the leading of road materials for the year. Forms of tender, etc., may be obtained on application to Mr. W. R. Plews, Highway Surveyor, Sedgefield, Ferryhill.

MARCH 23.—**Caerphilly.**—SCAVENGING, STREET WATERING, AND SUPPLY OF BROKEN LIMESTONE.—Caerphilly U.D.C. invite tenders for above. Specifications can be seen, and forms of tender obtained, at the Council Offices, Caerphilly.

MARCH 23.—**Edinburgh.**—SKATING RINK.—The Edinburgh Marine Gardens, Ltd., Directors invite tenders for the erection of skating rink. Plans may be seen, and schedules obtained, on application to Mr. James D. Gibson, surveyor, 60, Frederick-street, Edinburgh.

MARCH 23.—**Skirbeck.**—SCAVENGING AND ROAD WATERING.—Skirbeck Quarter Parochial Committee invite tenders for the above. Mr. Edward Armes, Clerk, Wyberton West-road, Skirbeck Quarter.

MARCH 24.—**Cannock.**—CARTING.—Cannock R.D.C. invite tenders from ratepayers in their district for carting road material. Particulars, etc., may be obtained on application to Mr. H. M. Whitehead, Surveyor, Penkridge.

MARCH 24.—**Eastertown.**—CEMENT TROUGHS.—Building and finishing fifteen cement concrete troughs at Baikie Howe, Eastertown. Plans, etc., may be seen with Mr. James Milne, Burgh Surveyor, Inverurie, or with Messrs. Jenkins & Marr, C.E. and architects, 16, Bridge-street, Aberdeen, the latter of whom will supply schedules of quantities.

MARCH 24.—**Lepton.**—STEAM ROLLING, ETC.—Lepton U.D.C. invite tenders for steam rolling and scarifying. Mr. Joe Sharp, Clerk to the Council, 23, John William-street, Huddersfield.

MARCH 25.—**Croft.**—LEADING STONES.—Croft R.D.C. invite tenders for leading stones to the roads within the district. Forms of tender, etc., may be obtained on application to the surveyor, Mr. John Hodgson, North Cowton, Darlington.

MARCH 25.—**Lytham.**—IRON RAILINGS.—Lytham U.D.C. invite tenders for providing and fixing iron railings and constructing a concrete kerb on the promenade. Plans may be seen, and specifications, etc., obtained, at the office of the Surveyor to the Council.

MARCH 26.—**Dublin.**—SCAVENGING.—The Board of Public Works invite tenders for the cleaning of ash-pits, earth closet pails, etc., and the removal of the contents thereof, at the several buildings in charge of the Commissioners of Public Works in the Phœnix Park. The specification, etc., can be had on application at office of Mr. H. Williams, Secretary, Office of Public Works, Dublin.

MARCH 27.—**Stockton.**—LEADING STONE.—Stockton R.D.C. invite tenders for leading stone and other materials for the roads. Full particulars, etc., may be obtained on application to Mr. W. Heslop, Highway Surveyor, Station-road, Norton-on-Tees.

MARCH 27.—**Wrotham.**—STEAM ROLLING, ETC.—The Wrotham U.D.C. invite tenders for steam rolling the roads in their district and for team labour. Forms of tender, etc., to be obtained of Mr. F. T. Elliott, Surveyor to the Council, Borough Green.

MARCH 29.—**Dublin.**—MOTOR FIRE-ENGINE.—The Waterworks Committee of the Corporation of Dublin invite tenders for one motor fire-engine, with pump and accessories. Specification, etc., may be seen at Chief's office, Central Station, Tara-street, and copies of same may be obtained on payment of 5s., which will not be refunded.

MARCH 29.—**Fareham.**—SCAVENGING.—The Fareham U.D.C. invite tenders for the collection and removal of house refuse and scrapings of streets. Specification may be seen, and form of tender obtained, on application to Mr. Walter Butler, the Surveyor to the Council.

MARCH 29.—**Sittingbourne.**—FENCING.—Sittingbourne U.D.C. invite tenders for spile and wire fencing round the new Allotment Ground near Murston Rectory. Specifications may be seen at the Surveyor's Office, 49, High-street.

MARCH 29.—**Sittingbourne.**—SCARIFYING, ETC.—Sittingbourne U.D.C. invite tenders for scarifying granite roads; rolling in granite and flints. Mr. Charles B. Harris, Clerk to the Council, 76, High-street, Sittingbourne.

MARCH 29.—**Swindon.**—FENCING BIRCH-STREET ALLOTMENTS.—The Corporation of Swindon invite tenders for the supply, delivery, fixing, and painting complete of about 160 yds. run of wrought-iron unclimbable fencing with gates. Copies of the plans, etc., may be obtained on written application to Mr. H. J. Hamp, Borough Surveyor, Town Hall, Swindon.

MARCH 30.—**Bridlington.**—ILLUMINATIONS.—The Property Committee invite tenders for a scheme of illuminations for the Royal Prince's-parade. Particulars, etc., to be obtained from the Engineer, Electricity Works, Bridlington.

MARCH 31.—**Littlehampton.**—WATERING-VAN.—Littlehampton U.D.C. invite tenders for the supply of a galvanised-iron watering-van. Form of tender can be obtained on application to the Council's Surveyor, Mr. H. Howard, F.S.I., Town Offices, Littlehampton.

APRIL 6.—**Maldon.**—STEAM ROLLERS.—Maldon R.D.C. invite tenders for the hire of three steam rollers and water-carts. Specifications, etc., may be obtained of Mr. E. J. Ennals, 6, Market-hill, Maldon, Essex.

APRIL 8.—**Enfield.**—FENCING.—The U.D.C. of Enfield invite tenders for supplying 1,900 lin. yds. (more or less) of wrought-iron unclimbable fencing and six pairs of gates to match; and 360 lin. yds. of wrought-iron unclimbable fencing and three pairs of gates. Drawings, etc., can be obtained on application to Mr. Richard Collins, the Council's Surveyor.

* APRIL 16.—**Bloemfontein (O.R.C.).**—ELECTRIC LIGHT FITTINGS.—The Government of the Orange River Colony invites tenders for electric light fittings for new law courts at Bloemfontein. See advertisement in this issue for further particulars.

NO DATE.—**Swinton.**—GLASS PARTITION.—Swinton and Pendlebury Education Authority invite tenders for the supplying and fixing of a glass partition at Moorside Council School, Swinton. Full particulars can be obtained on application to Mr. W. T. Postlethwaite, Council Offices, Swinton.

PAINTING, etc.

MARCH 22.—**Thorganby.**—RENOVATION.—The Trustees of the Wesleyan Chapel, Thorganby, invite tenders for the renovation and new interior. Plan, etc., to be seen at Mr. Thomas Howden's, blacksmith, Thorganby, near York.

MARCH 25. — **Rainhill.** — PAINTING.—Lancashire Asylums Board County Asylum, Rainhill, Visiting Committee invite tenders for painting all external wood and iron work at the main buildings, as well as of all other properties and buildings. Mr Jas. Gornall, Clerk and Steward, Clerk's Office, Rainhill Asylum.

MARCH 26.—**Salisbury.**—COLOURING, ETC.—The Infirmary Committee of Management invite tenders for colouring and cleaning the wards and other parts of the Hospital. A specification may be seen, and quantities obtained, upon application to Mr. M. Harding, High-street, Salisbury.

MARCH 27. — **Clifton, York.**—PAINTING.—Tenders invited for painting and decorating the church at the North Riding Asylum. Specifications can be seen at the North Riding Asylum, Clifton, York.

NO DATE.—**West Linton, Scotland.**—PAINTING, ETC.—West Linton School Board invite tenders for painting, etc., work at new school. Specifications to be had on application to Mr. John Sanderson, Clerk to the School Board.

ROADS, SANITARY, AND WATER WORKS.

MARCH 22. — **Batley.**—ROAD WORKS.—Batley T.C. invite tenders for the levelling, paving, channelling, and completing of streets. Plans, etc., may be seen on application to the Borough Engineer and Surveyor, Mr. Oscar J. Kirby, whose offices are at the Town Hall, Batley.

MARCH 22. — **Petersfield.** — PAVING, ETC.—Petersfield U.D.C. invite tenders for schedule prices for taking up existing pavements, kerbs, and channels, providing and resetting new kerbing and channelling, preparing ground, and laying new paving stones. Plans, etc., may be seen, and forms of tender obtained, at the Surveyor's Office, High-street, Petersfield.

MARCH 23.—**Nuneaton.**—SEWERS.—Tenders are invited for the construction of earthenware pipe sewers. Plans may be seen, and copies of specification, etc., obtained, on application at office of Mr. F. C. Cook, Borough Engineer and Surveyor, Council Offices, Nuneaton, and on deposit of the sum of 2*l.* 2s.

MARCH 23. — **Plymouth.**—DRAIN.—Reconstruction of the common drain in the rear of No. 1 to 65, Maidstone-avenue. Plans, etc., may be seen at offices of Mr. James Paton, Borough Engineer, Municipal Offices, Plymouth, and bills of quantities obtained.

MARCH 23.—**Wealdstone.**—MAIN DRAINAGE WORKS.—The Wealdstone U.D.C. invite tenders for the construction of a main intercepting sewer for the southern portion of their district. The plans may be seen, and specification, etc., may be obtained, on application to Mr. Herbert Walker, C.E., the Surveyor, Council Offices, Peel-road, Wealdstone, and on payment of 1*l.* 1s.

MARCH 24.—**Longton.**—STREET WORKS.—The T.C. invite tenders for the forming, kerbing, channelling, paving, etc., of Victoria-street, Friar-street, Charles-street, and Heathcote-court. Plans, etc., may be seen, and bill of quantities obtained, on application to Mr. J. W. Wardle, C.E., Borough Surveyor, Court House, Longton.

MARCH 24.—**Rochdale.**—PAVING.—The Corporation of Rochdale invite tenders for the paving in concrete of the bed of the River Roch, and also the covering of the river. Contractors must hold the licence of Messrs. L. G. Mouchel & Partners, Ltd., of 38, Victoria-street, Westminster, S.W., to execute the ferro-concrete work on the Hennebique system. Drawings may be seen, and specifications, etc., obtained, on payment of a deposit of 5*l.*, at the office of Mr. S. S. Platt, M.Inst.C.E., Borough Surveyor, Town Hall, Rochdale.

MARCH 25.—**Hackney.**—STREET WORKS.—Hackney B.C. invite tenders for the kerbing, channelling, paving, making-up, etc., of Castlewood-road. Form of tender obtained on application to Mr. Norman Scorgie, M.Inst.C.E., Borough Engineer and Surveyor, and on payment of the sum of 1*l.* 1s.

MARCH 25.—**Thornton.**—STREET WORKS.—Thornton U.D.C. invite tenders for the making-up of Butts-road. Plans may be seen, specification, etc., upon application to, and further particulars obtained from, Mr. H. Fenton, Surveyor, Council Offices, Thornton, upon payment of 1*l.*

MARCH 26.—**Cardiff.**—DRAINAGE.—Glamorgan C.C. invite tenders for the foundations and drainage of a new county hall in Cathays Park, Cardiff. Plans may be seen, and copies of the specification, etc., obtained, at the office of the architects, Messrs. Harris & Moodie, 8, New-square, Lincoln's-inn, London, W.C., and at offices of Mr. T. Mansel Franklen, Clerk of the C.C., Glamorgan C.C. Offices, Westgate-street, Cardiff

MARCH 26.—**Hull.**—SEWER.—The Corporation invite tenders for the construction of the sewer in Lister-street. Forms of tender, etc., may be obtained at the City Engineer's Office.

MARCH 26. — **Lumphinnans.** — SEWERS, ETC.—The Fife Coal Company, Ltd., desire tenders for the construction of sewers and sewage purification works for Lumphinnans, Fife. Plans may be seen, and schedules, etc., obtained, at 51, Queen-street, on deposit of 1*l.* 1s., with Mr. Wm. Allan Carter, M.Inst.C.E., 51, Queen-street, Edinburgh.

MARCH 27.—**Burslem.**—SEWERS.—The Corporation invite tenders for the construction of main sewers for the sewering of the High-lane and Scotia-road Districts. Plan, etc., can be seen, and quantities obtained, at the Borough Surveyor's Office, Queen-street, on payment of 2*l.* 2s.

MARCH 27.—**Gnosall.**—WATER SUPPLY WORKS.—The Gnosall D.C., in the County of Stafford, invite tenders for the building, at Audmore, Gnosall, of a covered service tank and of a water collecting chamber. Also for the excavating of a trench, and laying 1,360 yds. of iron pipes, etc. Drawings, etc., may be seen at the Engineer's Office, 15, High-street, Newport, Salop.

MARCH 27 — **Mossley, Lancs.** — EXTENSION OF SEWAGE WORKS.—The Corporation invite tenders for the works. Plans may be seen at the office of the Engineer, Town Hall, Mossley; also specification, etc., may be obtained on payment of a deposit of 3*l.*

MARCH 27. — **Willesborough.** — DRAINAGE. — The Kent Education Committee invite tenders for the construction of new offices and drainage at Willesborough Council School. Plans, etc., may be inspected upon application to the School Correspondent, Mr. W. J. Spicer, 27, Romney-road, Willesborough, Ashford, Kent, or at the offices of the Committee.

MARCH 29. — **Highworth.** — REPAIR OF ROADS. — Highworth R.D.C. invite tenders from persons willing to contract for the repair of district roads. Forms of tender, etc., can be obtained from the surveyor, Mr. Oliver Kimber, of Kite Hill, Wanborough.

MARCH 30. — **Chessington.** — WATER SUPPLY. — Epsom R.D.C. invite separate tenders for:—(1) Supplying about 1,960 yds. of 3-in. cast-iron water pipes, together with specials required; (2) the excavating of trenches, the carting and laying of the pipes, fixing of hyrants, etc. Plans, etc., can be seen at the office of Mr. F. A. Pratley, Surveyor to the Council, Waterloo-road, Epsom.

MARCH 30. — **Gateshead.** — CEMENT PATH WORK.—Tenders are required for cement path work in position on various roads and streets, as may be required for one year. Quantities, etc., may be obtained at the office of Mr. N. P. Pattinson, Borough Engineer, Town Hall, Gateshead.

MARCH 30. — **Keighley.**—SEWAGE DISPOSAL WORKS, UNCBA.—Tenders are invited for the construction of brick outfall sewer, tanks, filters, and other works in connexion with the above. Plans may be seen, and specifications, etc., obtained, upon application to Mr. Walter Fowlds, A.M.Inst.C.E., Borough Engineer, on deposit of a cheque for 2*l.*

MARCH 30. — **Valleyfield.**—ROAD DIVERSION.—The Fife Coal Company, Ltd., invite tenders for proposed road diversion at Valleyfield, Culross Parish, Fifeshire. Plans may be seen, and copies of the specification, etc., obtained, at the office of Mr. Robert Henderson, M.Inst.C.E., Engineer, 2, Saint Andrew-square, Edinburgh, on deposit of the sum of 1*l.* 1s. An engineer will meet intending contractors at Torryburn Station on arrival of the train there at 10.3 a.m. on March 25.

MARCH 31. — **Barnet.** — STREET WORKS.—Barnet U.D.C. invite tenders for the making-up Bedford-avenue (first portion). The plan, etc., can be seen, and all information obtained, on application to Mr. W. F. Wilkins, Surveyor to the Council, at his office, No. 40, High-street, Barnet.

MARCH 31. — **Liversedge.** — ASPHALTING. — West Riding Education Committee invite whole or separate tenders for asphalting playgrounds, Liversedge, Norristhorpe Provided School. Plans may be seen, and specifications, etc., obtained, on application to the West Riding Architect, County Hall, Wakefield. A deposit of 1*l.* must be sent by separate letter to the West Riding Treasurer, County Hall, Wakefield.

APRIL 2. — **Ecoleshall.** — SEWERAGE, ETC.—Stone R.D.C. (Staffordshire) invite tenders for stoneware pipe sewers, etc. Drawings, etc., may be seen, and bills of quantities obtained, at the offices of the engineers, Messrs. Willcox & Raikes, 63, Temple-row, Birmingham, on payment of a deposit of 3*l.* 3s

APRIL 3. — **Badenoch.**—ROAD WORKS.—Inverness-shire C.C. (Badenoch Division Committee) invite tenders for the upkeep of roads and bridges in Laggan—extent, 35½ miles, or thereby. Specification, etc., may be had from Mr. John Mackenzie, Road Surveyor, County Buildings, Kingussie, on lodging a deposit of 10s.

APRIL 3. — **Kilmalogue.** — SEPTIC TANK.—Cloney-gowan R.D.C. invite tenders for the construction of a septic tank at Kilmalogue, Portarlington, in accordance with specification prepared by Mr. Francis Bergin, B.E., Westmoreland-street, Dublin, which may be seen at District Council Office, Mountmelick.

APRIL 3. — **Stretford.** — STREET WORKS.—Stretford U.D.C. invite tenders for paving with setts, granited rock, asphalt, etc., streets and passages. The drawings, etc., may be seen, and forms of tender, etc., obtained, on application to Mr. Ernest Worrall, the Council's Surveyor, on payment by cheque of 2*l.* 2s.

APRIL 14. — **Clare.** — SEWER.—Clare R.D.C. invite tenders for works in connexion with a new sewer. The plans etc., can be seen on application to Mr. G. E. Mitchell, Inspector, Ashen-road, Clare, Suffolk, who will also forward a copy of the plans, etc., on receipt of a postal order for 5s.

APRIL 22.—**Ilkeston.**—SEWAGE DISPOSAL WORKS.—The Corporation of Ilkeston invite tenders for the provision, laying, and jointing of about 500 yds. of duplicate 18-in. cast-iron outfall sewer, etc. Drawings, etc., may be seen, and bills of quantities obtained, at the offices of the engineers, Messrs. Willcox & Raikes, of 63, Temple-row, Birmingham, on payment of a deposit of 5*l.* 5s.

JUNE 1. — **Cairo.** — SEWERAGE WORKS, ETC.—The Ministry of Public Works for the Egyptian Government invite tenders for the construction of sewage purification works, etc., for the City of Cairo. Copies of the conditions of tender may be obtained on application from (1) the Office of the Controller-General, Main Drainage Department, Ministry of Public Works, Cairo; (2) Sir Douglas Fox and Partners, 56, Moorgate-street, London, E.C.; (3) Lieut.-Col. J. H. Western, C.M.G., R.E., Queen Anne's-chambers, Broadway, Westminster, London, S.W.; (4) the Commercial Intelligence Branch of the Board of Trade, London, where can also be seen copies of the detailed description of the work.

STONES, MATERIAL, AND STORES.

MARCH 22. — **Bridge.** — ROAD MATERIAL, ETC.—The R.D.C. invite tenders for the supply of surface-picked and other hard flints and gravel; also for carting out stones. Forms, etc., may be had on application to the District Surveyor, Mr. S. Sladden, Littlebourne, Dover.

MARCH 22.—**Sculcoates.**—GRAVEL, ETC.—Sculcoates R.D.C. invite tenders for the supply of whinstone granite and gravel for the year ending March 31, 1910. Particulars, etc., may be obtained from Mr. A. Greaves, Surveyor, Woodbine Villa, Hessle.

MARCH 22. — **Sedgefield.**—BROKEN AND UNBROKEN STONE, ETC.—The R.D.C. of Sedgefield invite tenders for the supply and delivery of whinstone, slag, tar macadam, sanitary pipes, concrete flags, etc. Specification, etc., may be obtained on application to Mr W. R. Plews, Highway Surveyor, Sedgefield, Ferryhill.

MARCH 22. — **Tynemouth.**—MATERIALS, ETC.—Tynemouth Corporation invite tenders for supplying drain pipes, cement, bar and other iron, plumbers' materials, scavengers' brooms, spades and other tools, and general stores for a term of twelve months. Full particulars, etc., can be obtained at the office of Mr. John F. Smillie, Borough Surveyor.

MARCH 23. — **Edmonton.** — PIPES. — Edmonton U.D.C. invite tenders for stoneware pipes. Forms of tender, etc., may be obtained on application to Mr. G. Eedes Eachus, Engineer to the Council, Town Hall, Edmonton.

MARCH 23. — **Mountain Ash.** — DISINFECTANTS.—Mountain Ash U.D.C. invite tenders for the supply of disinfectants. Forms of tender may be obtained from Mr. H. T. Jones, Inspector of Nuisances, Town Hall, Mountain Ash.

MARCH 23. — **Poole.** — GRANITE.—Tenders are invited for the supply of granite during the year. Forms of tender, etc., may be obtained on application to the Borough Surveyor, Mr. Samuel J. Newman, F.R.I.B.A., Borough Surveyor, Market-street, Poole.

MARCH 24. — **Barton-upon-Irwell.**—MATERIALS.—Barton-upon-Irwell R.D.C. invite tenders for the supply of setts, kerbs, macadam, flags, limestone chippings, sanitary pipes, and road brushes. Form of tender can be obtained on application to the Surveyor at Union Offices, Patricroft.

MARCH 24.—**Cannock.**—GRANITE.—Cannock R.D.C. invite tenders for about 3,300 tons of broken granite for repair of highways. Specification, etc., may be obtained on application to Mr. H. M. Whitehead, District Surveyor, Penkridge, Stafford.

MARCH 24. — **Limerick.** — WATER PIPE.—Limerick Water Committee invite tenders for about 850 yds. of S. and F. cast-iron water pipes, 9 in. diameter. Specification may be obtained on application to Mr. J. J. Peacocke, B.A., B.E., City Surveyor, Town Hall, Limerick.

MARCH 24. — **Rochdale.** — ARTICLES.—The Paving, etc., Committee invite tenders for the supply and delivery of articles. Forms of tender may be obtained at the Borough Surveyor's Office, Town Hall, Rochdale.

MARCH 24. — **Shardlow.** — MATERIALS.—Shardlow R.D.C. invite tenders for the supply, etc., of road materials. Particulars, etc., to be obtained from Mr. John S. Wooddisse, Surveyor to the said Council, Surveyor's Office, Aston-on-Trent.

MARCH 24.—**Ware.**—GRANITE.—Ware U.D.C. invite tenders for the supply of broken blue Guernsey granite. Mr. Geo. H. Gisby, Clerk to the Council, Ware, Herts.

MARCH 25. — **Bolton.**—MATERIALS.—The Electricity Committee invite tenders for materials. Specifications, etc., may be obtained on application to Mr. A. A. Day, A.M.Inst.C.E., M.Inst.E.E., Borough Electrical Engineer, Spa-road, Bolton.

MARCH 25.—**Bristol.**—STORES.—The Electrical Committee invite tenders for (*c*) yellow flame and white open type arc lamp carbons; (*d*) A.C. house service meters. Copies of the specifications and forms of tender may be obtained from Mr. H. Faraday Proctor, City Electrical Engineer, City Electrical Engineer's Office, Temple Back, Bristol, on payment of a deposit of 2*l.* 2s. for each section.

MARCH 25.—**Croft.**—MATERIALS.—Croft R.D.C. invite tenders for broken and unbroken whinstone, also ironworks slag and annealed slag. Mr. Chas. H. Leach, Clerk to the Council, Union Offices, Darlington.

MARCH 25.—**Dublin.**—LIME.—Dublin Corporation invite tenders for lime for main drainage purposes. Specification, etc., may be obtained from the City Engineer, City Hall, Dublin, on payment of the sum of 1s. for each form.

MARCH 25.—**Hale.**—SUPPLIES.—Hale U.D.C. invite tenders for the supply of granite macadam, limestone, etc. Forms of tender will be supplied on receipt of a stamped addressed envelope, and further particulars may be obtained at office of Mr. S. A. Pickering, Surveyor, Council Offices, Hale, Cheshire.

MARCH 25.—**Horbury.**—ROAD MATERIALS.—Horbury U.D.C. invite tenders for the supply of granite, whinstone, limestone, dross, flags, kerbs, and setts during the twelve months. Forms of tender, etc., may be obtained on application to Mr. J. H. Drew, Engineer and Surveyor, Town Hall, Horbury.

MARCH 25. — **Long Crendon.** — MATERIALS.—The R.D.C. invite tenders for the supply of 1,340 tons of the best machine-broken granite and 41 tons of granite chippings. Forms of tender, etc., can be obtained from the Council's Surveyor, Mr. A. J. Webb, Long Crendon, Thame.

MARCH 25.—**Lytham.**—MATERIALS.—Lytham U.D.C. invite tenders for the supply of materials to March 31, 1910. Specifications, etc., may be obtained at the office of the Surveyor to the Council by forwarding stamped foolscap envelope.

MARCH 25. — **Peterborough.** — MATERIALS.—The City Council invite tenders for the supply of broken granite, edging, etc., and Portland cement. Specifications, etc., may be obtained at office of Mr. J. W. Walshaw, City Surveyor, Guildhall, Peterborough.

MARCH 27. — **Pocklington.** — STONE.—Pocklington R.D.C. invite tenders for the supply of best blue stone and slag for repairing the roads. Forms of tender can be obtained from Mr. Thomas Robson, Clerk, Pocklington.

MARCH 27.—**Stockport.**—MATERIALS, ETC.—The Gas Committee invite tenders for the supply of general stores for one year. Forms of tender and all further information may be obtained on application to the Engineer, Gasworks, Fortwood.

MARCH 27.—**Stockton.**—STONE.—The R.D.C. invite tenders for the supply of broken and unbroken whinstone and slag. Full particulars, etc., may be obtained on application to Mr. W. Heslop, Highway Surveyor, Station-road, Norton-on-Tees.

MARCH 29.—**Burton-upon-Trent.**—GRANITE.—The Guardians invite tenders for granite and carting. Mr. C. F. Chamberlin, Clerk to the Guardians, Union Offices, Burton-on-Trent.

MARCH 29. — **Edinburgh.** — ELECTRICITY SUPPLY.—The Lord Provost, etc., of Edinburgh invite tenders

for the supply of material for the Electricity Supply Department. Specifications, etc., can be obtained at the Engineer's Office, Dewar-place, Edinburgh, on payment of a deposit of 10s. for each specification.

MARCH 29. — **Sittingbourne.**—GRANITE.—Sittingbourne U.D.C. invite tenders for the supply of Guernsey granite. Forms provided by the Council may be obtained of Mr. W. L. Grant.

MARCH 29.—**Sittingbourne.**—MATERIALS.—Sittingbourne U.D.C. invite tenders for the supply of about 150 yds. of pit flints and 100 yds. clean pit gravel. Forms provided by the Council may be obtained of Mr. W. L. Grant, the Council's Surveyor.

MARCH 29. — **Sittingbourne.**—SUPPLIES.—Sittingbourne U.D.C. invite tenders for supplies and works for the year. Forms provided by the Council may be obtained of Mr. W. Leonard Grant, Surveyor, together with any other particulars.

MARCH 29. — **Steyning.** — FLINTS. — Steyning East R.D.C. invite tenders for flints. Forms of tender can be obtained on application to Mr. Arthur Flowers, Solicitor and Clerk to the Council, Union Offices, New Shoreham, Sussex, or of the Surveyor to the Council, Mr. G. W. Warr, Town Hall, Southwick.

MARCH 29. — **Steyning.**—GRANITE.—Steyning East R.D.C. invite tender for granite. Form of tender, etc., can be obtained on application to the Surveyor to the Council, Mr. G. W. Warr, Town Hall, Southwick.

MARCH 30. — **Epsom.** — MATERIALS.—Epsom R.D.C. invite tenders (*a*) for the supply of road materials; (*b*) for carting of materials; and (*c*) for watering during the year. Particulars, etc., may be had on application to Mr. T. E. Ware, Surveyor to the Council, Waterloo-road, Epsom.

MARCH 30.—**Govan.**—STORES, ETC.—The Electricity Committee invite tenders for the supply of stores for twelve months. Form of tender and schedule of stores to be obtained from the Burgh Electrical Engineer, Helen-street, Govan.

MARCH 30. — **Lydd.** — MATERIALS.—The T.C. invite tenders for the supply and delivery at Lydd Railway Station of rhenish columnar basalt and chippings basalt. No tender form supplied. Mr. Thomas Kettle, Borough Surveyor, Lydd.

MARCH 31. — **Erdington.**—MATERIALS.—Erdington U.D.C. Highways and Buildings Committee invite tenders for the supply of materials during the year. Copies of the specifications, etc., may be obtained upon application to Mr. Herbert H. Humphries, Engineer and Surveyor, the Council House, Erdington.

MARCH 31. — **Lepton.** — ROAD MATERIAL. — The U.D.C. invite tenders for the supply of granite, dross, etc., during the year. Full particulars, etc., can be obtained from Mr. Joe Sharp, Clerk, 23, John William-street, Huddersfield.

MARCH 31. — **Ramsey, Huntingdonshire.** — GRANITE.—The Ramsey U.D.C. invite tenders for the supply of 700 tons of broken granite. No forms of tender are issued by the Council. Mr. Richd. F. Serjeant, Clerk to the Council, Ramsey, Huntingdonshire.

MARCH 31. — **Rotherham.** — ANNUAL CONTRACTS, 1909-10.—The Corporation invite tenders for the supply and delivery of materials. Specification, etc., may be obtained on application to Mr. Ernest B. Martin, A.M.Inst.C.E., Borough Engineer.

* APRIL 1.—**London.**—ROAD MATERIALS.—The Commissioners of H.M. Works, etc., invite tenders for supply of road materials for Royal parks. See advertisement in this issue for further particulars.

APRIL 1. — **Middleton.**—MATERIALS.—The Corporation of Middleton invite tenders for materials. Further particulars, etc., may be obtained from Mr. W. Welburn, Borough Surveyor, Town Hall, Middleton.

APRIL 3.—**Sandwich.**—ROAD MATERIAL.—The Corporation invite tenders for the supply of broken granite, chippings, edge kerb, etc. No form of tender issued. Mr. Alf. J. Firby, Borough Surveyor, Borough Surveyor's Office.

APRIL 3. — **Worsley.** — ANNUAL CONTRACTS. — Worsley U.D.C. invite tenders for the supply of materials during the twelve months. Form of tender may be obtained on application to the Surveyor to the Council, Mr. James Howard, Council Offices, Walkden.

APRIL 5.—**Glasgow.**—MATERIALS.—The Corporation invite tenders for materials, etc., as may be required for one year. Samples, where specified, may be seen at the Purchasing Department, 46, Bath-street, Glasgow. Specification, etc., may be obtained on application to Mr. Jas. Dalrymple, General Manager, 46, Bath-street, Glasgow.

APRIL 5. — **West Ashford.** — BROKEN GRANITE.—The West Ashford R.D.C. invite tenders for the supply of about 1,780 yds. of granite. Further information and forms of tender can be obtained on application to Mr. Alfred Sims, Surveyor to the Council, Surveyor's Office, Charing, Kent.

APRIL 6.—**Hambledon.**—MATERIALS, ETC.—Hambledon R.D.C. invite tenders for cartage, road materials, stores. Forms of tender and other information may be obtained on application to the Highway Surveyor, Mr. Samuel B. Hasell, Surveyor's Office, Bramley.

APRIL 6. — **Maldon.** — MATERIALS.—Maldon R.D.C. invite tenders for the supply and delivery of road materials. Forms of tender, conditions, etc., can be obtained of Mr. E. J. Ennals, Surveyor, 6, Markethill, Maldon, Essex.

MAY 6.—**London.**—MATERIALS.—Hackney B.C. invite tenders for (1) underground cables; (2) boxes, frames, and covers; (3) box compound and insulating oils and tapes; (4) pitch compounds for filling troughs; (5) earthenware troughing, tiles, and cable supports. Form, etc., may be inspected at the Electricity Works, Millfields-road, Lower Clapton, N.E., and a copy of the general conditions, etc., may be obtained on application to Mr. W. A. Williams, Town Clerk, Town Hall, Mare-street, Hackney, on receipt of a deposit of 1*l.* per copy.

NO DATE. — **Burscough, etc.** — ROAD MATERIALS, ETC.—The U.D.C. of Lathom and Burscough invite tenders for the supply of road materials, etc., carting and emptying ashpits, for the year. Further particulars may be obtained from Mr. T. Burrows, Surveyor, on application at the Council Offices, Burscough Bridge.

Public Appointments.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*CLERK OF WORKS	Glamorgan County Council ...	3*l.* per week	March 24
*CLERK OF WORKS	Derbyshire County Council...	3*l.* per week	March 31

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*CONTRACTOR'S PLANT, MACHINERY, ETC., LONDON—Various Depôts	Wheatley Kirk, Price, & Co.	Mar. 23, etc.
*FREEHOLD PROPERTY, WILLESDEN—At the Mart	Deacon & Co.	March 24
*DEALS, BATTENS, ETC.—Great Hall, Winchester House, Old Broad-street, E.C.	Churchill & Sims	do.
*BUILDING LAND, ASHFORD—At the Pack Horse Hotel, Staines	Payne, Trapps, & Co.	do.
*MACHINERY AND PLANT, PLYMOUTH—On the Premises	Alfred Parkhouse	April 6
*FREEHOLD PROPERTY, BECKENHAM—At the Railway Hotel	W. Levens & Son	April 21

MISCELLANEOUS—*Continued from page 354.*

PROPOSED MEMORIAL CROSS, READING.

The Reading Town Council has received a letter from Dr. Jamieson B. Hurry offering to erect in the Forbury Gardens a memorial to King Henry I., the founder of Reading Abbey. The memorial is to take the form of a cross, composed of silver-grey Cornish granite, rising to a total height of 20 ft. Mr. W. Ravenscroft, F.S.A., is acting as honorary architect in the matter, the contractors being Messrs. G. Maile & Son.

THE PEABODY FUND.

The forty-fourth annual report of the Peabody Donation Fund states that repairs amounting to 12,962*l.* 4s. 10d., which include extensive drainage alterations at the Bedfordbury and Wild-street estates, have been carried out during the year. Sixty-four additional cottages at the Herne-hill estate were completed and fully occupied during the year. On account of the continued unsatisfactory letting of the Tottenham cottages, the rents have now been reduced from 7s. to 6s., and from 7s. 3d. to 6s. 3d. per cottage. A site has been purchased at Bethnal Green, nearly an acre in area, and plans and specifications have been approved for the erection of seven blocks of buildings containing 350 rooms. At the end of the year the governors had provided for the artisan and labouring poor of London 13,308 rooms, including those occupied by the superintendents and porters, besides bathrooms, laundries, and lavatories. These rooms comprised 5,665 separate dwellings, viz., 278 cottages of five rooms, 105 tenements of four rooms, 1,834 of three rooms, 2,548 of two rooms, and 900 of 1 room. The average weekly earnings of the head of each family in residence at the close of the year was 1*l.* 1s. 9d. In the cases in which the governors pay the rates the average weekly charge, including the rates of each dwelling was 5s. 4d. a week, and of each room 2s. 4d. The rent in all cases includes the free use of water, laundries, sculleries, and bathrooms. It should be noted that the offices of the Fund are now removed to 15, Buckingham-street, Strand, W.C.

ESTIMATES, 1909-10.

In the Civil Service estimates for the year ending on March 31, 1910, are, in the Public Works and Buildings group, items of 29,000*l.*—First Lord of the Admiralty's new residence (St. James's Park block); 50,000*l.*—Patent Office extension (Furnival-street site); 19,000*l.*—National Gallery extension (north-west site); 16,000*l.*—additional courts, Royal Courts of Justice (west site); 2,500*l.*—structural alteration of the jewel-house (Wakefield Tower), Tower of London; 6,600*l.*—works and alterations, with glass and iron roof over each side of the portico at the grand entrance, Buckingham Palace; and 300*l.*—improvement of the lighting of the dial faces of the clock tower, Houses of Parliament. The total estimates in this group amount to 3,165,000*l.*, being an increase of 111,000*l.* beyond the corresponding sum for 1908-9. In Class IV., Education, Science, and Art, the total of grants is 17,911,143*l.* (225,257*l.* net increase), the items comprising 127,935*l.*—British Museum; 60,543*l.*—Natural History Museum; 11,725*l.*—National Gallery; 5,793*l.*—National Portrait Gallery; 6,614*l.*—Wallace Collection; and 20,000*l.*—grants to technical institutions, schools of art, and evening schools. The section "Scientific Institutions," etc., has a total of 57,964*l.*, with items of 2,000*l.*—National Museum of Wales; and 4,500*l.*—National Library of Wales.

DECEASED ARCHITECTS' ESTATES.

The estate of the late E. A. Gruning, who died on December 29, aged 71, has been valued at 188,377*l.* 3s. 10d. gross, with net personalty 187,413*l.* 13s. 7d.; that of W. M. Fawcett, who died on December 27, aged 76, at 23,704*l.* gross, with net personalty 21,144*l.*; and that of J. Neale, who died on January 18, aged 58, at 63,456*l.* 17s. gross, with net personalty 31,075*l.* 15s. 1d. In addition to his bequest, subject to a life interest, of 1,000*l.* to the Royal Institute of British Architects, Mr. Neale has bequeathed to the Dean and Chapter of St. Albans and the Dean and Chapter of Canterbury collections of his drawings, and, failing the acceptance thereof by either of those capitular bodies, to the library of the Institute, and copies of his own works to public libraries which do not possess them.

THE GENERAL POST OFFICE.

In the House of Commons on March 10 Mr. H. C. Lea asked the First Commissioner of Works whether he was aware that in the new Post Office buildings in the City of London being built in ferro-concrete by Messrs. Holloway Brothers, only one coat of Portland cement facing was being applied, and whether he was satisfied that this was sufficient to finish the exterior rough surfaces of the ferro-concrete, especially in running mouldings, as it was not recognised by architects and the plastering trade, two coats always having been considered the minimum. He also inquired if one coat was in the specification of the architect to the new Post Office buildings.—Mr. Lewis Harcourt replied that the work was being done in accordance with specification, and was considered by his architects to be the most satisfactory treatment on concrete.—Mr. Lea asked if Mr. Harcourt was aware that owing to the way this work was done it was impossible to get satisfactory results, and men were being "sacked" by Messrs. Holloway Brothers wholesale.—Mr. Harcourt replied that this was contrary to his information. He had previously received deputations on the matter, and would now be pleased to receive any information given him in writing.

* All opposit be mad

CUTHBERT BRODERICK.

Mr. Butler Wilson recently gave an interesting lecture in the Leeds School of Art upon Broderick and his work. Although, said Mr. Wilson, Cuthbert Broderick was associated with Leeds for many years from the time when he won the competition with his designs for the Leeds Town Hall in 1852, he was a native of Hull. Many Leeds buildings were designed by him, however, and eventually he came to be looked upon as a Leeds architect. Amongst other buildings designed and carried out by him in Leeds were the Corn Exchange, the Leeds Institute, Headingley Hill Congregational Church, and a number of houses at Weetwood. In subsequent years he designed and carried out the Town Hall at Hull, and many residences on the north-east coast. The closing years of his life were spent at Neuilly, in Jersey, where he died on March 2, 1905. Since the period between the years 1852 and 1868, which covered sixteen years of Broderick's strenuous activity, said Mr. Wilson, we had been slowly awakening to the great virtue to be found in the work of men of his school. Broderick's principles were not subject to the whims of fashion, but had abided, and would abide for all time.

PRESERVATION OF MALVERN HILLS.

On Wednesday a Select Committee of the House of Commons passed the preamble of the Bill, promoted by the Malvern Hills Conservators, giving them power to make by-laws to preserve the amenities of the district. The Conservators proposed clauses to prevent quarrying, but these the Committee refused to allow. Amongst the clauses passed were those for empowering the National Trust for Places of Historic Interest or Natural Beauty to procure funds for the Conservators, and to authorise the County Councils of Worcestershire and Herefordshire to contribute.

Patents.

APPLICATIONS PUBLISHED.*

14,802 of 1908.—Robert Rawling and John Thomas: Ventilating shaft tops.

19,312 of 1908.—Oliver Imray (Gewerkschaft Deutscher Kaiser Hambom): Method of making compressed hollow cast-steel blocks.

25,497 of 1907.—David Honeywood and Garratt Payne: Machinery for crushing or grinding ore rock, cement, and the like.

3,509 of 1908.—Guillaume Geessels: Device for increasing the draught of chimneys and for obtaining draught with bad chimneys.

3,651 of 1908.—Barnabas J. Casterline: Process for hardening and tempering steel.

3,652 of 1908.—Barnabas J. Casterline: Composition of matter to be employed for hardening and tempering steel.

3,688 of 1908.—Robert Alwyn Arnold Stephen Piercy: Stagings or supports for submarine, boring, blasting, pile-driving, block-setting, and like operations.

3,836 of 1908.—Frederick Arthur Bullivant and Cyril Stanley Wardle: Apparatus for gripping ropes and the like, more especially intended for use in securing loads to the rope in rope transporters.

4,005 of 1908.—Henry Crofts Longsdon and James Arthur Spencer: Firegrates.

7,462 of 1908.—Claude William Hill: Pile-drivers, drop stamps, and like machines.

10,246 of 1908.—William Kenneth Hoskins: Valve gully trap.

14,449 of 1908.—Alexander William Stewart: Ventilating louvres.

16,012 of 1908.—William Frederick Lautenschlager: Cement-applying machines.

16,373 of 1908.—Arthur Whitehead: Cranes.

18,827 of 1908.—William Edmund Parkes and James Harry Parkes: Locks and latches of the adjustable keyhole type.

19,803 of 1908.—Joseph Leonard Dinwiddie and Albert Kranz Braun: Mechanism for operating doors and gates automatically.

20,399 of 1908.—John Thomas Simpson: Reinforcing devices for concrete structures.

6,326 of 1908.—James Sidney Whitaker: Steam crane excavators or steam navvies.

3,848 of 1908.—Frank Wilford Mellowes: Glazing roof-lights, windows, and the like.

12,594 of 1908.—Fred Wetherall Turner: Machines for mixing concrete and similar substances.

26,578 of 1908.—Simon Warendorf: Facing or wall tiles.

870 of 1909.—Thomas Joseph Maclaughlin: Tool for applying putty.

* All these applications are in the stage in which opposition to the grant of patents upon them can be made.

PUBLISHER'S NOTICES.

Nat. Tel., 6112 Gerrard. Telegrams, "The Builder, London."

THE INDEX (with TITLE-PAGE) for VOLUME XCV. (July to December, 1908) was given as a supplement with the issue of January 9th.

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

READING CASES (Cloth), with Strings, price 2d. each.

THE NINETY-FIFTH VOLUME of "The Builder" (bound), price Twelve Shillings and Sixpence.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 3s. 6d. each.

CHARGES FOR ADVERTISEMENTS.

COMPETITIONS, CONTRACTS, ALL NOTICES ISSUED BY CORPORATE BODIES, COUNTY AND OTHER COUNCILS, PROSPECTUSES OF PUBLIC COMPANIES, SALES BY TENDER, LEGAL ANNOUNCEMENTS, etc., etc.

Six lines or under ..... 6s. 0d.
Each additional line ..... 1s. 0d.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under ..... 4s. 6d.
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Terms for series of Trade advertisements, and for front page and other special positions, on application to the Publisher.

SITUATIONS WANTED (Single-handed—Labour only).

Four lines (about thirty words) or under ..... 2s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps must not be sent; but all sums should be remitted by Postal Orders, payable to J. MORGAN, and addressed to the Publisher of "THE BUILDER," 4, Catherine Street, W.C.

Advertisements for the current week's issue are received up to ONE p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after TWELVE NOON on that day. Those intended for the Outside Wrapper should be in by TWELVE NOON on WEDNESDAY.

ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before TEN o'clock on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, etc., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

ADVERTISERS in "THE BUILDER" may have *Replies addressed to the Office, 4, Catherine Street, Strand, W.C., free of charge.* Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage. Unused stamps are returned to advertisers the week after publication.

N.B.—The Reply Boxes are not intended for trade lists, circulars, and the like; should these be received, they cannot (if noticed) be forwarded.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES { NINEPENCE EACH. By post (carefully packed), 1s.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

March 1.—By THOMPSON & WOOD (at Grimsby).

Tetney, Lincs.—Tetney Grange Farm, 95 a. 0 r. 8 p., f. £2,535

March 3.—By LANGRIDGE & FREEMAN (at Borough Green).

Borough Green, Kent.—Chapel-st., two freehold s., gross rental 44*l.* 450
Chapel-st., seven freehold cottages, w.r. 83*l.* 17s. 500
Chapel-st., six freehold cottages, and two plots of land 687

March 3.—By STEPHENSON & ALEXANDER (at Aberdare).

Aberdare, Glamorgan.—Cwmaman, Ivy Bush Inn, u.t. 44 yrs., g.r. 1*l.* 10s. 4,050
Dare-rd., Colliers Arms Hotel, u.t. 46 yrs., g.r. 1*l.* 0s. 10½d. 1,800
Dowlais-st., Beehive Inn, u.t. 16 yrs., g.r. 2*l.* 3s. 8d. 900
Aberaman, Glamorgan.—Regent-st., Penylan Inn, u.t. 40 yrs., g.r. 3*l.* 10s. 6d. 3,000
Hirwain, Brecon.—High-st., Cardiff Arms Hotel and five cottages adjoining, u.t. 13 yrs., g.r. 3*l.* 9s. 2d. 525
Resolven, Glamorgan.—Neath-rd., The Gored Hotel, etc., f. 3,000
Rock and Fountain Inn, lease for 19 yrs. at 28*l.* per annum 460
Treharris, Glamorgan.—Royal Hotel, u.t. 80 yrs., g.r. 11*l.* 10s. 6,600
Treherbert, Glamorgan.—Scott-st., Tynewydd Hotel, u.t. 57 yrs., g.r. 15*l.* 7,300
Dowlais, Glamorgan.—Berry-sq., Welsh Harp Inn, u.t. 42 yrs., g.r., etc., 4*l.* 8s. 8d. 1,000
Ferndale, Glamorgan.—Duffryn-st., Duffryn Arms Hotel, u.t. 79 yrs., g.r. 7*l.* 1s. 8d. 10,000
Beaufort, Monmouth.—Beaufort Arms Hotel, lifehold, g.r. 9*l.*, with covering policy 1,200

March 4.—By NEWBON, SHEPHARD, & EDWARDS.

Kentish Town.—116 to 122 (even), Dartmouth-park-hill (s.), f., y.r. 195*l.* 2,120
Walthamstow.—310, Higham-hill-rd., 2, Manor-rd., and plot of land, f., w.r. 37*l.* 14s. 300
Islington.—8 and 14, Upper Park-st., f., y. and e.r. 66*l.* 720
Highbury.—15, Drayton-pk., u.t. 54½ yrs., g.r. 2*l.* 10s., e.r. 55*l.* 455

March 5.—By ERNEST S. BEARD & DANIELL (at Brightlingsea).

Brightlingsea, Essex.—57, New-st., f., p. 290
11 to 25 (odd), Nelson-st., f., y.r. 61*l.* 12s. 860
41 and 43, Sidney-st., f. y. and e.r. 15*l.* 165

March 8.—By GARLANDS'.

Tottenham.—696 and 698, Seven Sisters-rd., (s.), u.t. 70 yrs., g.r. 25*l.*, y. and e.r. 68*l.* .. 135

By JENKINS, SONS, & WEBSTER.

Twickenham.—102 and 104, Amyand Park-rd., u.t. 58 yrs., g.r. 13*l.*, y.r. 60*l.* 270
Stoke Newington.—16, Aden-gr., u.t. 58 yrs. g.r. 7*l.* 5s., y.r. 32*l.* 265

March 9.—By BALCH & BALCH.

Hampstead.—39, King Henry's-rd., u.t. 52 yrs., g.r. 12*l.*, p. £400
Kentish Town.—Dartmouth Park Hill, i.g.r. 8*l.*, u.t. 43 yrs., g.r. 1*l.* 110

By DEBENHAM, TEWSON, RICHARDSON, & Co.

Blackheath.—The Heath, freehold plot of land, area 2 r. 8 p. 650
Richmond.—239, Sandycombe-rd. (s.), f., y.r. 30*l.* 400
Wood Green.—18, Braemar-av., f., y.r. 30*l.* 390

By MARTIN, WHITE, & Co.

Herne Hill.—43, Hollingbourne-rd., u.t. 82 yrs., g.r. 8*l.*, e.r. 45*l.* 410
Dulwich.—Townley-rd., Caversham, u.t. 55 yrs., g.r. 11*l.*, e.r. 52*l.* 360
Clapton.—93, Dunlace-rd., u.t. 60 yrs., g.r. 5*l.* w.r. 31*l.* 10s. 180

By ROGERS, CHAPMAN, & THOMAS.

Putney.—Upper Richmond-rd., f.g. rent 144*l.*, reversion in 66 yrs 3,690
Upper Richmond-rd., f.g. rents 57*l.* 10s., reversion in 56 yrs 1,650

By PEAT & HOLDSWORTH (at Reigate).

Leigh (Surrey).—Charman's Farm, 10 a. 3 r. 38 p., f., (including timber) 630
Dawes Green, two freehold cottages and 2 r. 34 p., p. 185

By S. & G. KINGSTON (at Spalding).

Holbeach Drove (Lincs.).—A freehold holding, 24 a. 1 r. 20 p. 1,600
Three freehold cottages, market garden and orchard land, 5 a. 1 r. 4 p. 645
Freehold pasture and arable land, 8 a. 3 r. 1 p. 385
Whaplode Drove (Lincs.).—Freehold arable land, 5 a. 290
Sutton St. James (Lincs.).—Two parcels of arable land, c., 8 a. 2 r. 24 p. 435
Sutton St. Edmunds (Lincs.).—Two parcels of arable land, c., 20 a. 0 r. 13 p. 700

March 10.—By BAXTER, PAYNE, & LEPPER.

Beckenham.—100, 102, 104 and 106, Croydon-rd., f., e.r. 160*l.* 1,190
Shortlands.—Scott's-la., Gable End, f., e.r. 130*l.* 1,150

By BEARD & SON.

Harrow.—6, Greenhill Parade (s.), f., y.r. 100*l.* 1,875
Paddington.—388, Harrow-rd., (s.), u.t. 54 yrs., g.r. 9*l.*, y.r. 100*l.* 1,110

By E. & H. RUDDOCK,

Dulwich.—217, Lordship-la. (s.), u.t. 70 yrs., g.r. 8*l.*, y.r. 40*l.* 300

By DOUGLAS YOUNG & Co.

South Lambeth.—76 and 78, Southville, f., w.r. 75*l.* 8s. 660
Southville, f.g.r. 5*l.*, reversion in 12 yrs. 230
Southville (Coopers Arms b.-h.), f.g.r. 3*l.* 16s. 6d., reversion in 12 yrs. 500
84 to 92 (even), Southville, f., area 10,150 ft., w. and e.r. 221*l.* 900
31, 32, 33, and 34, Riverhall-st., u.t. 24 yrs., g.r. 9*l.* 9s., w. and e.r. 166*l.* 8s. 460
Battersea.—1 to 27 (odd), Stockdale-rd., u.t. 55 yrs., g.r. 38*l.* 10s., w. and e.r. 504*l.* 4s. .. 1,430
2 to 14 (even), Stockdale-rd., f., w. and e.r. 213*l.* 4s. 980
32 to 44 (even), Ascalon-st., u.t. 34½ yrs., g.r. 14*l.*, w.r. 213*l.* 4s. 700
Vauxhall.—Belfour-st., &c., l.g. rents 68*l.*, u.t. 37 yrs., g.r. 46*l.* 230
Thornton Heath.—59 to 79 (odd), Beulah-rd., (s.), f., w. and e.r. 513*l.* 17s. 2,300
81 to 95 (odd), Beulah-rd., f., w. and e.r. 270*l.* 8s. 1,020
Parchmore-rd., freehold stabling, smithy, etc., w.r. 7*l.* 10s. 200
Rotherhithe.—17 to 29 (odd), Faustin-pl., u.t. 64 yrs., g.r. 35*l.*, w.r. 140*l.* 8s. 195

By H. J. WAY & SON (at Cowes).

Cowes, Isle of Wight.—12, High-st., (s.), f., p., 5 and 6, Temperance-row, f., w.r., 23*l.* 8s... 625 200

March 11.—By CHESTERTON & SONS.

Chiswick.—19 to 29 (odd), Upham park-rd., u.t. 60 yrs., g.r. 31*l.* 10s., y.r. 176*l.* 1,170
Hoxton.—6, Wenlock-st., u.t. 33½ yrs., g.r. 5*l.* 5s., p. 215

By C. C. & T. MOORE.

Stratford.—18, Burford-rd., (s.), f., y.r. 60*l.* 860
Leytonstone.—46, Vernon-rd., u.t., 81 yrs., g.r. 6*l.*, e.r. 32*l.* 240
Islington.—9, Compton-ter., and 9, Compton-av., u.t. 8 yrs., g.r. etc. 15*l.*, y. and w.r. 95*l.* 8s. 110

By PERFECT & SON.

Holloway.—35, Carleton-rd., u.t. 55 yrs., g.r. 13*l.* 16s. 6d., e.r. 80*l.* 770
2, St. Peter's-rd., u.t. 44 yrs., g.r. 5*l.*, y.r. 40*l.* 340

By STIMSON & SONS.

Redhill, Surrey.—6 to 18 (even), Clarence-walk, f., w.r. 101*l.* 8s. 1,140
Plumstead.—1 and 3, Chesnut-rd., f., w.r. 65*l.* .. 400
38, 42 to 52 (even), 58, 60 and 62, Parkdale-rd., f., w.r 214*l.* 10s. 1,785
West Croydon.—31 to 37 (odd), Greenside-rd., u.t. 95 yrs., g.r. 21*l.*, w.r. 139*l.* 2s. 750
Plaistow.—556, Barking-rd. (s.), u.t. 74 yrs., g.r. 9*l.*, y.r. 40*l.* 345
Hanwell.—47, Seward-rd., f., e.r. 32*l.* 330
Upton Park.—36, 37, and 38, Ferndale-rd., f. and u.t. 71½ yrs., g.r. 15*l.*, w.r. 78*l.* 245
Stepney.—89, 93, 95, and 97, Skidmore-st., and 110, Ernest-st., u.t. 8 yrs., g.r. 11*l.* 16s., w.r. 153*l.* 8s. 190

By VENTOM, BULL, & COOPER.

City.—6, Giltspur-st., area 2,190 ft., building lease for 80 yrs., let at per annum 370

By GRIMLEY & SON (at Birmingham).

Shirley, Warwick.—Stratford-rd., Ivy Cottage and stabling, f., y.r. 20*l.* 430
Edgbaston, Warwick.—111 and 113, Summer-rd., f., w.r. 55*l.* 5s. 650
6 and 7, Irving-rd., u.t. 36 yrs., g.r. 5*l.* 5s., w.r. 52*l.* 410
20 and 22, Bath-row, u.t. 24 yrs., g.r. 15*l.*, w.r. 58*l.* 10s. 135
Winston Green, Warwick.—30 to 38 (even), Villiers-st., u.t. 72 yrs., g.r. 14*l.*, w.r. 82*l.* 11s. 490
40 to 48 (even), Villiers-st., u.t. 72 yrs., g.r. 12*l.*, w.r. 81*l.* 5s. 445

Balsall Heath, Worcs.—185 and 187, Mary-st., f., w.r. 35*l.* 15s. £390
Sparkbrook, Worcs.—289 and 291, Stratford-rd., u.t. 60 yrs., g.r. 15*l.*, w.r. 51*l.* 4s..... 300
6 and 7, Smallbrook-st. (s.), u.t. 57 yrs., g.r. 76*l.*, y.r. 170*l.*..... 1,100

March 12.—By WM. GROGAN & BOYD.

Maidenhead, Berks.—Bridge Cottage, f.. p. 1,075

By JASPER J. KELF.

Walthamstow.—20, Howard-rd., u.t. 94 yrs., g.r. 8*l.*, p. 300
14, Silverdale-rd., f., p..... 320
Roberts-rd., l.g.r. 7*l.*, reversion in 98 yrs. 160

By RIDER & SONS.

Harlesden.—26, Tubbs-rd., u.t. 72 yrs., g.r. 5*l.*, w.r. 46*l.* 16s. 235

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. public-house; o. for offices; s. for shops; ct. for court.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Best Stocks	1 6 6	per 1000 alongside, in river.
Picked Stocks for Facings	2 10 0	" delivered
Flettons	1 4 6	" at railway depôt.
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire	3 15 0	" " "
Do. Bullnose	4 0 0	" " "
Best Stourbridge Fire Bricks	3 14 0	" " "
GLAZED BRICKS		
Best White and Ivory Glazed Stretchers	10 7 6	" " "
Headers	9 17 6	" " "
Quoins, Bullnose, and Flats	13 17 6	" " "
Double Stretchers	15 17 6	" " "
Double Headers	12 17 6	" " "
One Side and two Ends	16 17 6	" " "
Two Sides and one End	17 17 6	" " "
Splays, Chamferred, Squints	15 10 0	" " "
Best Dipped Salt Glazed Stretchers	10 7 6	" " "
Headers	9 17 6	" " "
Quoins, Bullnose, and Flats	13 17 6	" " "
Double Stretchers	15 17 6	" " "
Double Headers	12 17 6	" " "
One Side and two Ends	16 17 6	" " "
Two Sides and one End	17 17 6	" " "
Splays, Chamferred, Squints	15 10 0	" " "
Second Quality White and Dipped Salt Glazed	1 5 0	" less than best.

	s. d.	
Thames and Pit Sand	6 6	per yard, delivered.
Thames Ballast	5 0	" "
Best Portland Cement	28 0	per ton, "
Best Ground Blue Lias Lime	19 0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	" "
PORTLAND STONE (20 ft average)—		
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 1	" "
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 2½	" "

	s. d.	
Ancester in blocks	1 10	per ft. cube, deld. rly. depôt
Beer "	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks	2 4	" "
Red Corsehill "	2 2	" "
Closeburn Ree Freestone	2 0	" "
Red Mansfield "	2 4	" "

YORK STONE—*Robin Hood Quality.*

	s. d.	
Scappled random blocks	2 10	per ft. cube, deld. rly. dep.
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per ft. super. "
6 in. rubbed two sides ditto, ditto	2 6	" "
3 in. sawn two sides slabs (random sizes)	0 11½	" "
2 in to 2½ in. sawn one side slabs (random sizes)	0 7½	" "
½ in. to 2 in. ditto, ditto	0 6	" "

STONE (*continued*).

HARD YORK—	s. d.	
Scappled random blocks	3 0	per ft. cube, deld. rly. dep.
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 8	per ft. super. "
6 in. rubbed two sides ditto	3 0	" "
3 in. sawn two sides slabs (random sizes)	1 2	" "
2 in. self-faced random flags	0 5	" "

SLATES.

In. In.	£ s. d.	
20×10 best blue Bangor	13 2 6	per 1000 of 1200 at r.d.
20×12 " "	13 17 6	" "
20×10 first quality "	13 0 0	" "
20×12 " "	13 15 0	" "
16×8 " "	7 5 0	" "
22×10 best blue Portmadoc	12 12 6	" "
16×8 " "	6 12 6	" "
20×10 best Eureka unfading green	15 17 6	" "
20×12 " "	18 7 6	" "
18×10 " "	13 5 0	" "
16×8 " "	10 5 0	" "
20×10 permanent green	11 12 6	" "
18×10 " "	9 12 6	" "
66×8 " "	6 12 6	" "

TILES.

Best plain red roofing tiles	42	0 per 1000, at rly depôt.
Hip and Valley tiles	3	7 per doz. "
Best Broseley tiles	50	0 per 1000 "
Do. Ornamental tiles	52	6 " "
Hip and Valley tiles	4	0 per doz. "
Best Ruabon red, brown, or brindled do. (Edwards)	57	6 per 1000 "
Do. Ornamental do.	60	0 " "
Hip tiles	4	0 per doz. "
Valley tiles	3	0 " "
Best Red or Mottled Staffordshire do. (Peakes)	51	9 per 1000 "
Do. Ornamental do.	54	6 " "
Hip tiles	4	1 per doz. "
Valley tiles	3	8 " "
Best "Rosemary" brand plain tiles	48	0 per 1000 "
Best Ornamental tiles	50	0 " "
Hip tiles	4	0 per doz. "
Valley tiles	3	8 " "
Best "Hartshill" brand plain tiles, sand-faced	50	0 per 1000 "
Do. pressed	47	6 " "
Do. Ornamental do.	50	0 " "
Hip tiles	4	0 per doz. "
Valley tiles	3	6 " "
Staffordshire (Hanley) Reds or Brindled tiles	42	6 per 1000 "
Hand-made sand-faced	45	0 " "
Hip tiles	4	0 per doz. "
Valley tiles	3	6 " "

WOOD.

BUILDING WOOD.	At per standard.	
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	£ s. d. 13 10 0	... £ s. d. 15 0 0
Deals: best 3 by 9	13 0 0	... 14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	... 12 0 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best.
Battens: seconds	0 10 0	"
2 in. by 4 in. and 2 in. by 6in.	9 0 0	... 10 0 0
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	... 9 10 0
Foreign Sawn Boards—		
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¼ in.	1 0 0	"
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 4 10 0	... 5 0 0
Seconds	4 0 0	... 4 10 0
Small timber (8 in. to 10 in.)	3 12 6	... 3 15 0
Small timber (6 in. to 8 in.)	3 0 0	... 3 10 0
Swedish balks	2 10 0	... 3 0 0
Pitch-pine timber (30 ft. average)	4 0 0	... 4 15 0

JOINERS' WOOD.	At per standard.	
White Sea: first yellow deals, 3 in. by 11 in.	24 0 0	... 25 0 0
3 in. by 9 in.	22 0 0	... 23 0 0
Batten 2½ in. and 3 in. by 7 in.	16 10 0	... 18 0 0
White Sea: second yellow deals, 3 in. by 1 in.	18 10 0	... 20 0 0
3 in. by 9 in.	17 10 0	... 19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	... 14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	... 15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	... 12 0 0
Petersburg first yellow deals, 3 in. by 11 in.	21 0 0	... 22 10 0
Do. 3 in. by 9 in.	18 0 0	... 19 10 0
Battens	13 10 0	... 15 0 0
Petersburg second yellow deals, 3 in. by 11 in.	16 0 0	... 17 0 0
Do. 3 in. by 9 in.	14 10 0	... 16 0 0
Battens	11 0 0	... 12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	... 14 0 0
Do. 3 in. by 9 in.	12 10 0	... 14 0 0
Battens	10 0 0	... 11 0 0
White Sea and Petersburg—		
First white deals, 3 in. by 11 in.	14 10 0	... 15 10 0
" " 3 in. by 9 in.	13 10 0	... 14 0 0
Battens	11 0 0	... 12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	... 14 10 0
" " 3 in. by 9 in.	12 10 0	... 13 10 0
Battens	10 0 0	... 11 0 0
Pitch-pine: deals	18 0 0	... 21 0 0
Under 2 in. thick extra	0 10 0	... 1 0 0
Yellow pine—First, regular sizes	44 0 0	upwards.
Oddments	32 0 0	"
Seconds, regular sizes	33 0 0	"
Oddments	28 0 0	"
Kauri Pine Planks, per ft. cube	0 3 6	... 0 5 0
Danzig and Stettin Oak logs—		
Large, per ft. cube	0 3 0	... 0 3 9
Small " "	0 2 6	... 0 2 6

WOOD (*continued*).

JOINERS' WOOD (*continued*)—	At per standard. £ s. d.	... £ s. d.
Wainscot Oak Logs, per ft. cube	0 5 6	... 0 6 0
Dry Wainscot Oak, per ft. sup. as inch	0 0 8½	... 0 0 9½
¼ in. do. do	0 0 7	... —
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	... 0 1 0
Selected, Figury, per ft. super. as inch	0 1 6	... 0 2 6
Dry Walnut, American, per ft. super as inch	0 0 10	... 0 1 0
Teak per load	17 0 0	... 22 0 0
American Whitewood Planks, per ft. cube	0 4 0	0 5 0
Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	... 0 17 0
1 in. by 7 in. yellow, planed and matched	0 4 0	... 0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	... 1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	... 0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	... 0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	... 0 16 6
¼ in. by 7 in. yellow matched and beaded or V-jointed brds.	0 11 0	... 0 13 6
1 in. by 7 in. " "	0 14 0	... 0 18 0
¼ in. by 7 in. white " "	0 10 0	... 0 11 6
1 in. by 7 in. " "	0 12 9	... 0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	... £ s. d.
Rolled Steel Joists, ordinary sections	7 0 0	... 7 10 0
Compound Girders, ordinary sections	9 0 0	... 10 0 0
Steel Compound Stanchions	11 0 0	... 2 0 0
Angles, Tees, and Channels, ordinary sections	9 0 0	... 10 0 0
Fliteh Plates	9 0 0	... 9 10 0
Cast Iron Columns and Stanchions including ordinary patterns	7 10 0	... 8 10 0

METALS.

IRON—	Per ton, in London. £ s. d.	... £ s. d.
Common Bars	8 10 0	... 9 0 0
Staffordshire Crown Bars, good merchant quality	8 15 0	... 9 5 0
Staffordshire "Marked Bars"	10 10 0	... —
Mild Steel Bars	8 15 0	... 9 5 0
Hoop Iron, basis price	9 5 0	... 9 10 0
" " Galvanised	17 0 0	.. —
(*And upwards, according to size and gauge.)		
Sheet Iron Black—		
Ordinary sizes to 20 g.	9 15 0	... —
" " 24 g.	10 15 0	... —
" " 26 g.	12 5 0	... —
Sheet Iron, Galvanized, flat, ordinary quality—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 0 0	... —
Ordinary sizes to 22 g. and 24 g.	15 10 0	... —
" " 26 g.	1 10 0	... —
Sheet Iron, Galvanized, flat, best quality—		
Ordinary sizes to 20 g.	18 0 0	... —
" " 22 g. and 24 g.	18 10 0	... —
" " 26 g.	20 0 0	... —
Galvanised Corrugated Sheets—		
Ordinary sizes, 6 ft. to 8 ft. 20 g.	14 10 0	... —
" " 22 g. and 24 g.	14 15 0	... —
" " 26 g.	16 5 0	... —
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	12 0 0	... —
Best Soft Steel Sheets, 22 g. & 24 g.	13 0 0	... —
" " " 26 g.	15 0 0	... —
Cut Nails, 3 in. to 6 in.	10 10 0	... 11 0 0
(Under 3 in., usual trade extras.)		

LEAD, &c.

	Per ton, in London. £ s. d.	... £ s. d.
LEAD—Sheet, English, 3lb. and up.	16 10 0	... —
Pipe in coils	17 7 6	... —
Soil pipe	19 7 6	... —
Compo pipe	20 7 6	... —
ZINC—Sheet—		
Vielle Montagne	26 10 0	... —
Silesian	26 5 0	... —
COPPER—		
Strong sheet per lb.	0 1 0	... —
Thin " "	0 1 1	... —
Copper nails "	0 0 10	... —
Copper wire "	0 0 10	... —
BRASS—		
Strong Sheet "	0 0 11	... —
Thin "	0 1 0	... —
TIN—English Ingots "	0 1 5	... —
SOLDER—Plumbers "	0 0 7	... —
Tinmans "	0 0 9½	... —
Blowpipe "	0 1 0	... —

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

15 oz. thirds	2½d. per ft. delivered.
" fourths	1½d. " "
21 oz. thirds	3d. " "
" fourths	2½d. " "
26 oz. thirds	4d. " "
" fourths	3d. " "
32 oz. thirds	4½d " "
" fourths	4½d. " "
Fluted Sheet, 15 oz	3½d. " "
" 21 oz.	4½d. " "

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

⅛ Hartley's	2½d. per ft. delivered.
⅛ "	2⅝d. " "
¼ "	2⅝d. " "
Figured, Oxford Rolled and "Oceanic" Glass, white	3½d. " "
" " tinted	5d. " "
OTHER GLASS—	
"Arctic" Glass, white	3½d. " "
" " tinted	5d. " "
" " Ruby and opalescents	1s. " "

OILS, &c.		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 1 11
" " " in barrels	"	0 2 0
" " " in drums	"	0 2 3
Boiled " " in barrels	"	0 2 3
" " " in drums	"	0 2 6
Turpentine in Barrels	"	0 2 5
" in drums	"	0 2 7
Genuine Ground English White Lead	per ton	20 10 0
Red Lead, Dry	"	20 0 0
Best Linseed Oil Putty	per cwt.	0 7 0
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.	Per gallon.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 0
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flating Varnish	0 18 0
White Pale Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 9
French and Brush Polish	0 10 6

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursday.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted*

BANGOR.—For erecting a cottage on Gorad-road, Upper Bangor. Mr. W. G. Williams, architect, 202, High-street, Bangor:—

Roberts & Williams	£1,014	Roberts & Owen	£806
J. M. Jones	929	Watkin, Jones, & Son, Bangor*	765
Jones & Williams	867	J. Owen	655
W. Parry	817		

BARKING.—For the erection of a new police-station at Barking. Mr. J. Dixon Butler, F.R.I.B.A., Surveyor to the Metropolitan Police, New Scotland-yard, S.W. Quantities by Messrs. Thurgood, Son, & Chidgey, 8, Aldelphi-terrace, Strand, W.C.:—

F. C. Minter	£10,992	J. C. Garbett	£10,110
Harris & Wardrop	10,595	Hammond & Son	9,9[illegible]7
Trollope & Son & Colls & Sons, Ltd.	10,523	J. W. Jerram	9,9[illegible]0
Ashby & Horner	10,420	Willmott & Sons	9,957
Higgs & Hill, Ltd.	10,364	Lovatt, Ltd.	9,890
Treasure & Son, Ltd.	10,300	Lawrence & Son	9,792
Dowsing & Davis	10,200	Godson & Sons	9,733
		Mowlem & Co., Ltd.	9,680
		Jarvis & Sons, Ltd.	9,660

BEXHILL.—For constructing a sea wall and promenade, for the Corporation. Mr. G. Ball, A.M.Inst.C.E., Town Hall, Bexhill:—

Firth & Co.	£9,119 12 3	G. Wimpey & Co.	£5,990 0 0
G. Lawson	8,933 0 0	J. Cochrane & Sons	5,838 17 3
A. Fasey & Son	8,458 9 5	R. H. B. Neal, Ltd.	5,791 19 8
Playfair & Toole	7,454 9 11	C. Ford	5,768 0 0
W. Hill & Co.	7,255 10 5	F. Handman & Co.	5,759 4 0
R. C. Brebner & Co.	7,039 5 4	J. Moran & Son, Ltd.	5,600 0 0
F. Murray & Co.	6,789 13 0	W. J. Fryer & Co.	5,320 0 0
W. Muirhead & Co.	6,408 1 8	J. O'M. Dixon	5,076 3 3
Yorkshire Hennebique Contracting Co., Ltd.	6,358 17 7	Fry Bros.	5,064 19 8
Peerless Dennis, Ltd.	6,187 0 0	S. Carey, Haddocks Hill-road, Bexhill‡	4,988 4 7
C. Bell & Sons, Ltd.	5,996 3 6		

[Borough Surveyor's estimate, £5,814.]
‡ Recommended for acceptance.

BRIDLINGTON.—For erecting three houses, St. John's-street, for Mr. A. J. Stevenson. Mr. C. F. Johnson, architect and surveyor, Westgate, Bridlington:—

J. H. Hudson	£1,034 10	C. Gant	£880 0
W. Hoggard	969 13	F. Martindale	878 0
A. A. Booth	886 10	R. Musk & Son*	874 0

[All of Bridlington.]

CRICKLEWOOD, Etc.—For coal bays, etc., at Cricklewood and Kempton Park (Staines Reservoirs Communication Works of the New River District), for the Metropolitan Water Board:—

Docwra & Sons	£13,078 16 11
J. Mowlem & Co., Ltd.	12,624 0 0
Wickstead & Beardsell	12,488 9 9
B. G. Hanson	11,839 0 0
W. Muirhead & Co.	11,680 16 0
Dick, Kerr, & Co., Ltd.	11,574 12 1
W. Moss & Son, Ltd.	11,291 0 0
R. Love	11,255 0 0
Jarvis & Sons, Ltd.	10,800 0 0
W. J. Renshaw	10,595 0 0
Perry & Co., Ltd.	10,587 0 0
Leslie & Co., Ltd.	10,333 0 0
Waring White, Ltd.	10,278 0 0
Kirk & Randall*	10,183 0 0
J. Allen & Sons, Ltd.	9,989 0 0
W. & D. Wilkins	9,390 0 0
A. N. Coles	9,016 14 8

[Engineer's estimate, £9,500.]

DAVENTRY.—For sewage outfall works and laying sewer in the parish of Staverton, for the Rural District Council. Mr. J. B. Williams, Engineer, The Moot Hall, Daventry:—

A. E. Palmer	£1,398 0 0	H. Martin, Ltd.	£1,090 0 0
Firth & Co.	1,233 10 0	W. G. Wilmott	1,080 6 0
J. O. M. Dixon	1,219 5 7	T. Watson	1,032 0 0
Bosworth & Wakeford	1,095 0 0	W. W. Webster, Guilsborough*	935 0 0

DORCHESTER.—For erecting a cricket pavilion, for Dorchester Cricket Club. Mr. Percival T. Harrison, A.M.I.C.E., architect, Borough Surveyor, Dorchester:—
I. Miller, Contractor, Osmington, Weymouth* £249 18 0

EAST SHEEN.—For alteration to Rose Cottage, Upper Richmond-road, East Sheen, S.W. Mr. R. B. Rowell, A.R.I.B.A., Triangle-corner, East Sheen, S.W.:—

W. Lowe	£152 0 0
R. T. Hughes & Co., Ltd., Portobello Works, Mortlake, S.W.*	137 0 0

EAST WORLINGTON.—For constructing a culvert over a portion of the stream at Little Witheridge, and for retaining wall, etc., for South Molton Rural District Council. Mr. W. S. Gardner, surveyor, Rack Mead Cottage, Chittlehampton:—

F. E. Rogers	£97 0 0
A. Parsons & Son, Chulmleigh*	85 0 0

ENFIELD.—For the erection of a block of schools at Lavender-road, for the Education Committee. Mr. G. E. T. Lawrence, architect, 22, Buckingham-street, Adelphi, W.C.:—

		Addition if Glazed Brick Facing for Interior Walls Adopted.
W. J. Ballard & Co.	£20,420	£1,603
L. & W. H. Patman	19,785	2,160
Myall & Upson	19,600	2,084
W. Pattinson & Sons, Ltd.	18,787	1,638
A. N. Coles	18,562	2,076
Kirk & Randall	18,546	1,872
F. & G. Foster	18,444	1,998
J. W. Jerram	18,269	1,450
J. Appleby & Sons	18,260	1,740
T. Hickman	17,995	1,520
R. A. Lowe & Co.	17,982	1,211
W. Moss & Sons, Ltd.	17,937	1,435
F. & C. Davey, Ltd.	17,785	1,319
A. Fairhead & Son	17,667	1,365
B. & G. Nightingale	17,636	1,466
A. Monk	17,475	1,424
W. J. Fryer	17,450	1,425
J. S. Hammond & Son	17,387	1,230
Brand, Pettitt, & Co.	17,380	1,550
Clark & Sons	17,325	1,150
Fitch & Cox	16,920	1,920
W. Lawrence & Son	16,840	1,330
T. J. Hawkins & Co.	16,824	1,391
W. J. Maddison	16,723	1,364
H. Knight & Son, Tottenham, N.	*16,527	1,234

FRIZINGHALL.—Accepted for erecting two houses, for Mr. John R. Grainger. Mr. H. E. Priestley, architect, 17, Bertram-road, Manningham. Quantities by architect:—

Excavator, Mason, and Bricklayer: E. Smethurst, Great Horton	£340 0 0
Slaters: Hillam Bros.	27 16 6
Plasterer: D. Coates, Shelf	37 0 0
Plumbers and Glaziers: Atkinson & Smith, Frizinghall	73 0 0

GALSTON (Scotland).—For waterworks:—

For Supply of 8-in. Cast-iron Pipes and Specials.

D. Y. Stewart & Co., Ltd.	£1,230	Macfarlane, Strang, & Co., Lochburn Ironworks, Glasgow*	£1,107
Maclaren & Co., Ltd.	1,192		
Cochrane & Co., Ltd.	1,155		
Stanton Ironworks Co., Ltd.	1,114		

For Laying 8-in. Pipes.

J. Steel	£735	G. Flett	£450
Kings & Co., Ltd.	549	H. Picken	382
Brown & Kincaid	545	Mitchell & Young	380
J. D. Meikle	540	T. Timothy	356
G. C. Allen	489	T. Cullinane, Kilwinning, Ayrshire*	348
J. Pollock	482		

GRIMSBY.—Accepted tenders for annual supplies for municipal year, viz., April 1, 1909, to March 31, 1910. Mr. H. Gilbert Whyatt, Borough Engineer and Surveyor:—
Road Maintenance and Stone Supply Co., Ltd., Gravesend, for columnar basalt macadam.
Contract and Works Supply Co., Foster's-buildings, Sheffield, for slag and lias lime.
Mitchell & Co., Haven Side, Grimsby, for chalk.
J. McKelvie & Co., Guildhall-chambers, Sandhill, Newcastle-on-Tyne, for granite setts, kerbs, etc.
Moulsons & Mellors, Ltd., Spinkwell Quarries, Bradford, for Yorks kerbs, etc., and Yorks flags.
Croft Granite, etc., Co., Croft, near Leicester, for artificial flags.
East Anglian Cement Co., Ltd., Cambridge, for Portland cement.
Dawber, Townsley, & Co., Ltd., River Head, Grimsby, for drainage pipes, etc.
Middleton Bros., 10-11, St. George-street, London, E., for paints.
A. Cook, 17, Market-place, Grimsby, for plumber's work.

HODDESDON.—For new County Council school, for Hertfordshire County Council:—

P. Steed	£3,028	W. Lawrence & Son	£2,448 0
D. W. Barker	2,777	F. Hitch	2,425 0
A. Negus & Son	2,709	P. R. Paul	2,378 0
J. A. Hunt	2,639	Jennings & Grenfell	2,350 0
A. A. Sedcole	2,627	H. Norris & Son, Hertford*	2,283 15
C. Hale & Co.	2,580		
Fitch & Cox	2,530		
G. S. Foster & Son	2,517		
Clark & Son	2,450		

[Architect's estimate, £2,355 3s. 7d.]

LICHFIELD.—For private street works, Chase-terrace (Princess-street, High-street, Eastgate-street, Lorne-street, etc.), for the Rural District Council. Mr. C. O. Rawstron, District Surveyor, Lichfield. Quantities by Surveyor:—
J. Atkins, Ryecroft-hill, Walsall* .. £2,642 1 2

LLANTRISANT.—For widening, diverting, etc., the district road between Llantrisant and Llantwit Fardre, for the Rural District Council. Mr. Gomer S. Morgan, Surveyor, School-street, Pontyclun:—

R. Pomeroy	£885 16 7	J. Sutherland	£733 6 3
A. G. Collins & Co.	823 5 4	G. L. Morgan	706 5 6
J. Rutter	800 17 6	John & West	669 0 0
W. Thomas & Sons	770 8 1½	T. Davies	668 19 10
H. Murray	761 12 8	W. John	648 18 0
Evans & Morris	755 0 0	T. Williams, Bute Lime Works, Pontyclun*	645 13 3
R. Well	752 7 5		
Barnes, Chaplin, & Co.	734 2 9		

LONDON.—For the erection of a pair of semi-detached villas, Raynes Park, S.W. Mr. R. B. Rowell, A.R.I.B.A., Triangle-corner, East Sheen, S.W.:—

A. J. Riggs	£635	W. E. Nash	£475
E. H. Cooper	628	A. Burton	465
R. T. Hughes & Co., Ltd.	590	A. Judson, 65, Station-road, Hanwell*	460
Meech & Goodall	553		

LONDON.—For the supply of varnish, for the London County Council. For the supply of—(1) 450 gallons black baking insulating varnish to specification 100; (2) 450 gallons of black air drying insulating varnish to specification 101; (3) 450 gallons black finishing varnish for insulating purposes to specification 102:—

—	1	2	3
	A gall. s. d.	A gall. s. d.	A gall. s. d.
R. Kearsley & Co., Ltd., Ripon	*6 6	*6 0	*3 6
Ruberoid Company, Ltd.	5 0	4 10	9 0
Sterling Varnishing Co.	5 6	5 6	10 6
F. J. Down	7 6	8 6	7 6
Pinchin, Johnson, & Co.	7 11	7 11	10 5
General Electric Co.	7 11	8 2	10 7

LONDON.—For provision of rotary converters, Elephant and Castle sub-station, for the London County Council:—

Bruce, Peebles, & Co., Ltd.	£9,416 0
British Westinghouse Electric and Manufacturing Co.	5,601 0
General Electric Co., Ltd.	4,636 10
British Thomson Houston Co., Ltd.	4,490 0
Electric Construction Co., Ltd.	4,319 0
Dick, Kerr, & Co., Ltd., Abchurch-yard, E.C.	4,652 0 ‡
	4,274 10 *

‡ Alternative tender.
[The estimate of the Chief Officer of Tramways, comparable with these figures, is £4,500.]

LONDON.—For provision of overhead travelling crane, Elephant and Castle sub-station, for the London County Council:—

Higginbottom & Mannock	£480 0 0
G. Anderson & Co. (1905), Ltd.	450 0 0
Chatteris Engineering Works Co.	396 0 0
S. Russell & Sons	385 0 0
Chambers, Scott, & Co.	370 0 0
Carrick & Ritchie	375 0 0‡
	368 0 0
S. H. Heywood & Co., Ltd.	363 0 0
Applebys, Ltd.	333 0 0
B. Johnson & Son, Ltd.	330 0 0
J. M. Henderson & Co.	317 10 0
Morley Electrical Engineering Co., Ltd.	315 0 0
J. Carrick & Sons, Ltd.	315 0 0
North British Lifting and Moving Appliance Co., Ltd.	315 0 0
Pickerings, Ltd.	295 10 0
J. Smith (Keighley), Ltd.	295 0 0
J. Spencer & Co.	290 0 0
A. Jack & Co.	268 0 0
Holt & Willett, Cradley Heath*	265 0 0

‡ Alternative tender.
[The estimate of the Chief Officer of Tramways, comparable with these figures, is £350.]

LONDON.—For supply of static transformers, Elephant and Castle sub-station, for the London County Council:—

W. E. Burnand & Co.	£2,727 10 0
British Thomson Houston Co., Ltd.	2,716 0 0
Electric Construction Co., Ltd.	2,427 0 0
General Electric Co., Ltd.	2,284 0 0
British Westinghouse Electric and Manufacturing Co.	2,112 0 0
Dick, Kerr, & Co., Ltd.	2,092 0 0
British Electric Transformer Co., Ltd., Hayes, Middlesex*	1,879 0 0

[The estimate of the Chief Officer of Tramways, comparable with these figures, is £2,000.]

LONDON.—For provision of high and low tension switchgear, Elephant and Castle sub-station, for the London County Council:—

Electric and Ordnance Accessories Co., Ltd.	£5,982 13 0
Electric Construction Co., Ltd.	3,057 3 6
British Westinghouse Electric and Manufacturing Co.	2,786 1 4
Ferranti, Ltd.	2,746 0 6
Whipp & Bourne	2,731 12 4
The Switchgear Co., Ltd.	2,670 0 0
Johnson & Phillips, Ltd.	2,495 1 3
Spagnoletti, Ltd., Goldhawk-road, W.*	2,458 3 0

[The estimate of the Chief Officer of Tramways, comparable with these figures, is £2,450.]

LONDON.—For supply of forging and annealing furnace, central car repair depôt, for the London County Council:—

Meldrum Bros., Timperley	£250 0 0
Horsfall Destructor Co.	172 0 0
Alldays & Onions, Ltd.	134 2 6
Mountain & Gibson, Ltd., Bury*	128 0 0

[The estimate of the Chief Officer of Tramways, comparable with the above figures, is £110.]

LONDON.—For supply of cement, for the London County Council. (1) 2,000 tons of cement delivered at the various tramway depôts on the south side of the Thames; (2) 1,250 tons of cement delivered at the various tramway depôts on the north side of the Thames:—

—	South.				North.	
	By van at Clarence Wharf.	By barge at Clarence Wharf.	By barge at Deptford Wharf.	By barge at Battersea Wharf.	By barge at Metropolis Wharf.	By barge at Bridge Wharf.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Associated Portland Cement Co.	0 19 4	0 18 4	0 18 3	0 18 5	*0 19 5	*0 19 5
	0 19 10	—	—	—	—	—
E. R. Burtt & Sons	1 0 5	0 18 4	0 18 2	0 18 4	0 19 6	0 19 6
Trechman, Weekes, & Co.	—	0 18 10	0 18 10	0 18 10	1 1 0	1 0 0
Martin, Earle, & Co. Ltd.	1 0 5	0 19 1	0 18 10	0 19 1	1 0 4	0 19 1
West Kent Portland Cement Co., Rochester	*0 19 8	*0 18 0	—	*0 18 0	—	—
Ditto (alternative tender)	1 0 9	—	0 17 11	—	0 19 6	0 19 6
Coles, Shadbolt, & Co.	1 2 2	1 0 6	1 2 0	1 0 6	1 0 1	1 0 3

LONDON.—For wiring and fitting for electric lighting, Norwood carshed, for the London County Council:—

Lund Bros. & Co.	£920	4	8
G. Weston & Sons	809	7	0
C. Pullan	797	0	3
E. Sheldrick & Co.	783	1	4
Comyn Ching & Co., Ltd.	778	10	0
Pinching & Walton	£758	0	9
H. G. Whitehead	739	17	9
G. E. Taylor & Co.	720	2	3½
Tredegar & Co., Victoria-street, S.W.*	706	7	8

[The estimate of the Chief Officer of Tramways, comparable with the above tenders, is £900.]

LONDON.—For electric lighting, etc., London County Council Trade School for Girls, Queen-square, Bloomsbury, Holborn, for the London County Council:—

Pinching & Walton* £319 7 9

LONDON.—For repairs to Cloudesley-street School, Islington, for London County Council Education Committee:—

Patman & Fotheringham, Ltd.	£184		
McCormick & Sons	184		
G. S. S. Williams & Son	170		
Marchant & Hirst	£169		
W. Reason	159		
C. P. Roberts & Co.	158		
Stevens & Sons, Yongepark*	156		

MILFORD HAVEN.—For erecting a house in North-road, for Mr. G. E. Jones. Mr. C. Launcelot-Blethyn, architect, Milford Haven:—

Phelps & Owens	£700	0	
F. Lloyd & Co.	689	0	
A. Heatherley & Co.	655	0	
Cole & Sons	650	0	
S. Scott	602	0	
H. Adams	£565	10	
E. T. Powell, The Meads, Milford Haven*	546	10	

NEWPORT (Mon.).—For new road, being a diversion of the Newport and Bedwas main road at Church-road, in lieu of Volland-hill, for Monmouthshire County Council. Mr. W. Tanner, F.S.I., County Surveyor, Newport. Quantities by Surveyor:—

W. J. Reeves	£1,678	16	10
J. Jenkins, Ltd.	1,528	10	0
J. Dix	1,527	2	0
A. J. Rossiter	1,500	0	0
W. C. Shaddock	1,463	8	5
J. C. Truman	1,449	0	0
R. Pomeroy & Co.	1,425	4	8
Barnes, Chaplin, & Co.	£1,365	6	3
W. L. Meredith	1,354	8	6
C. H. Reed	1,350	0	0
H. C. Parfitt	1,290	0	0
H. Smith	1,245	0	1
E. Osmond & Sons, Ely, Cardiff*	1,227	1	0

PONTYPRIDD.—For erecting twenty houses or more at Pwllgwann, for Llwynmadoc Building Club. Mr. E. Rees, architect and surveyor, Alexandra-chambers, Pontypridd:—

	Per house.
L. Davies	£229 0 0
E. Jones	219 10 0
Jones Bros.	218 10 0
R. Jones, Comnna road, Pontypridd*	217 0 0
T. H. Tucker	212 8 0

SNEATON.—For alterations in chancel, for reseating and other works at the Parish Church, near Whitby. Mr. E. H. Smales, A.R.I.B.A., 64, Baxtergate, Whitby:—

J. White	£615	10	6
R. Boulton & Sons	593	19	6
R. Lauder & Co.	564	6	2
Allinsons	511	14	2
W. Lawson	508	12	0
R. Harland	496	11	6
M. Dale & J. Jinnison	470	1	7
J. Wortley	£467	0	0
J. Kidd & T. Fletcher	459	3	6
J. Braim & Sons	368	9	0
R. Lennard & Sons, Whitby*	327	3	6

TONBRIDGE.—For additions at Pembury Workhouse, for the Tonbridge Board of Guardians. Mr. Stanley Philpot, Architect and Surveyor, 65, High-street, Tunbridge Wells:—

F. G. Elliott	£627	0	
Sykes & Sons	498	15	
Roberts & Co.	490	0	
Soper & Jones	461	0	
G. & F. Penn	453	0	
Stanbridge & Sons	452	12	
Goodwin Bros.	447	0	
J. Crates	£444	0	
E. Smith	435	0	
F. Burr	428	0	
K. C. Jarvis	410	0	
Punnett & Sons, Tonbridge*	413	0	

TREFDRAETH.—For erecting a Council school, for Anglesey Education Committee. Mr. J. Owen, F.R.I.B.A., County Architect, Menai Bridge:—

J. Roberts & Son	£2,222		
J. D. Pritchard	1,996		
W. & R. Jones	1,935		
R. Jones	1,759		
Roberts & Williams	1,754		
H. Hughes	£1,724		
H. & J. Williams	1,561		
T. G. Prytherch	1,485		
O. W. & T. Rowlands, Rhosneige*	1,375		

TREFOREST.—For Glyntaff cemetery extension, for the Pontypridd Burial Board. Messrs. A. O. Evans, Williams, & Evans, architects, Pontypridd. Quantities by architects:—

L. Davis	£3,720	0	0
H. Murray	3,620	0	0
W. Williams	3,499	0	0
Evans & Murray	3,490	3	4
R. Jones	3,456	10	0
J. Sutherland	3,380	0	0
E. Jones	3,367	0	0
Knox & Wells	3,350	0	0
Barnes Chaplin Company	3,342	15	6
A. G. Collins & Co.	3,341	7	7
G. L. Morgan	3,029	19	0
Smith, Jones, & Sons	2,991	13	9
R. Webb, Abercynon, near Pontypridd*	2,818	13	6

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